

A- REQUEST

BP350

ECR: —

ECO: 6

Nature of proposed change :	NEED INSTRUCTION TO REPAIR PADS TO ALLOW FIT WITH DART WEAR SHOE BOOTS (INSTR. FOR GRINDING)
Reason :	BOOTS KEEP FROM PROPERLY RESTING ON PAD.
Submitted By :	CLAUDE BOUCE, AELI CAN / DP
Date :	2015 02 06

B- IMPACT ANALYSIS

Product Manager	Signature : <u>[Signature]</u> /date : 2015 02 06
Operation Manager	Signature : <u>[Signature]</u> /date : 2015 02 06
Quality System Manager	Signature : <u>[Signature]</u> /date : 2015 02 06
Regulatory affairs Manager	Signature : <u>[Signature]</u> /date : 2015 02 06
Supplier A	Signature : _____ /date : _____
Supplier B	Signature : _____ /date : _____
Other	Signature : _____ /date : _____

C- DECISION

Risk analysis	<p>No particular risk associated with the suggested change.</p> <p>Signature: <u>N. Barleau</u> /date: <u>2015 02 06</u></p>
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Decision	<p>ISSUE AN EO THAT ALLOWS MECHANICS TO SLIGHTLY GRIND PADS WHERE WEAR SHOES BOOTS RUB AGAINST THEM IN ORDER TO GIVE THEM THE MISSING SPACE THEY NEED. EO TO BE APPLIED BY MECHANICS OR NEED</p> <p>Signature: <u>N. Barleau</u> /date: <u>2015 02 06</u> 0024.</p>
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D- ACTION PLAN

Action	Resp	Due date :	Verified by :
1) GET DIATECH A TO	NB	2015 02 06	NB
2) GET INFO FROM CAP ACHI	NB	2015 02 -	NB
3) IDENTIFY GRINDING METHOD	Michael	2015 04 02	NB
4) ISSUE EO	Michael	2015 04 02	NB
5) TRANSMIT EO TO CUSTOMER	DB	2015 09 07	NB
6) ADD EO TO ALL STOCKS <small>INSTRUCTION (SEE ATTACHED RECORD)</small>	DR	2015 04 10	NB
7) ADD EO TO TYPICAL DOCS TOPIC	NB	2015 04 10	NB
8) RECORD EO FOR CLOSURE	NB	2015 04 10	NB

Effective date : <u>2015 04 02</u>	Effective lot no : <u>ALL</u>	<p>in stock at issue:</p> <p>LNF-130102-01 (#14)</p> <p>LNF-141114-01 (#3 TO 16)</p> <p>& ALL THE ones AT CAN ACHI</p>
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Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 3 of 3
Reviewed & approved by: /		2006 09 09

E- VERIFICATION

Verified Elements :	By/ date :
Instruction provides appropriate info	DB
to adapt pad to damage caused	2015 06 12
by DART Skid bolt.	

F- VALIDATION

Validated Elements :	By/ date :
Instruction meets needed autho.	DB
to repair pads.	2015 06 12

G- CLOSURE

I confirm that the designated change has been performed successfully :	
Signature : <i>D. Dubeau</i>	/date : 2015 06 12



877A, Alphonse-Desrochers
St-Nicholas, Lévis, Québec
Canada G7A 5K6

INSERTED INTO ALL BOXES
IN STOCK AT DATE OF ISSUE

LN-130202-01 Box: 14

LN-141114-01 Box: 3 TO 16

Engineering Order

NOT SENT TO USERS
ALREADY ON MARKET
OTHER THAN Heli

Title:

Repair of BearPaw BP350 for Installation with Dart Wear Pads

EO Number:

HTC-EO-0709-003 Rev NC

Date issued:

April 02, 2015

Customer:**Project number:**

A2007-09

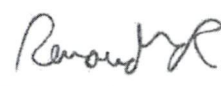
BEARPAW INFORMATION**Part Number / Description:**

314-0018-01-S / BP350 Pad Streamline


Drawing:

314-0018-01-S, Rev D, dated December 21, 2012

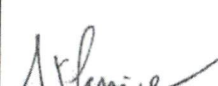
SIGNATURE**Prepared by:**


R. Berthelot, Eng.
(OIQ# 5033095)
Aviatech (ATS)

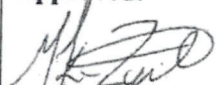
Mechanical:


R. Berthelot, Eng.
(OIQ# 5033095)
Aviatech (ATS)

Electrical:**Verified:**


J-F. Lemire, Eng.
(OIQ# 141774)
Aviatech (ATS)

Approved:


Mirko Zgela
(DAR #310)
Aviatech (ATS)

SCOPE:

Aviatech Technical Services (ATS) has been contracted by HeliTowcart to develop a repair procedure that aims at removing interference between BearPaw BP350 and Dart wear pad bolt heads. This Engineering Order (EO) describes the step-by-step approach to perform this repair and evaluates structural compliance of the repaired BearPaw.

REFERENCES DOCUMENTS:

The following documents is needed to carry out the modification:

- [1] 314-0020-00-E, BearPaw Model BP350 – Installation Instruction – AS350/355 Series, Rev F, dated December 21, 2012.

GENERAL:

All steps in this procedure must be followed. Any deviations or enquiries related to the process are to be forwarded to Aviatech Technical Services at (819) 601-8049 for approval prior to performing the modification.

SAFETY:

The use of proper safety equipment and safe work environment is required at all time.

SPECIAL TOOLS:

- Dremel rotary tool
- Carbide end mill, 1/8" shank diameter, 1" length of cut, overall length 3" (P/N 3066A59 from Mc Master Carr or equivalent)

DESCRIPTION OF CHANGE:

When BearPaw BP350 is installed on a skid equipped with Dart wear pads, interference occurs between bolt heads and BearPaw (Figure 1). This can damage the BearPaw, as shown on Figure 2. Damages on this figure were obtained directly after first installation, without performing any landing.

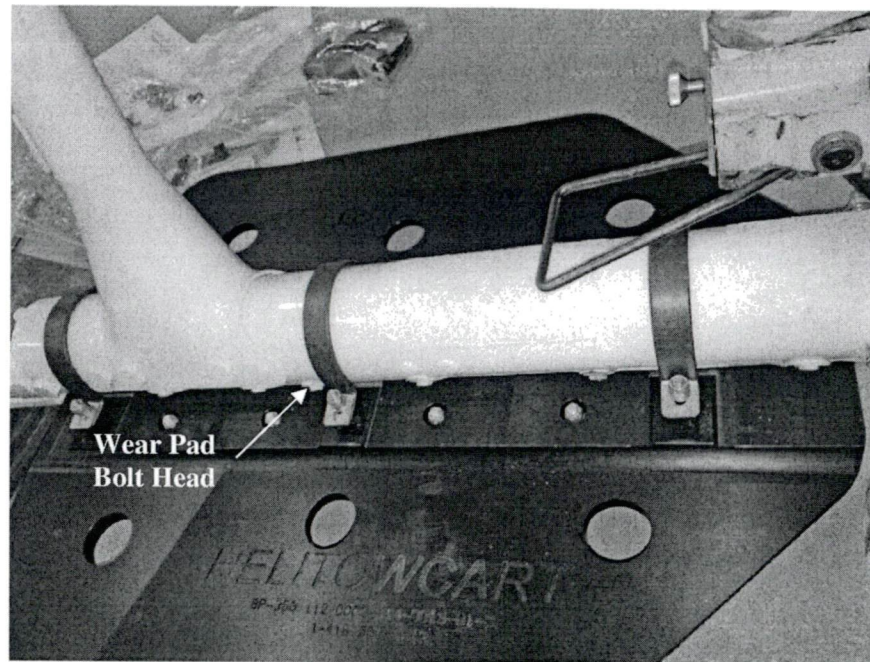


Figure 1 – BearPaw BP350 Installed with Dart Wear Pads

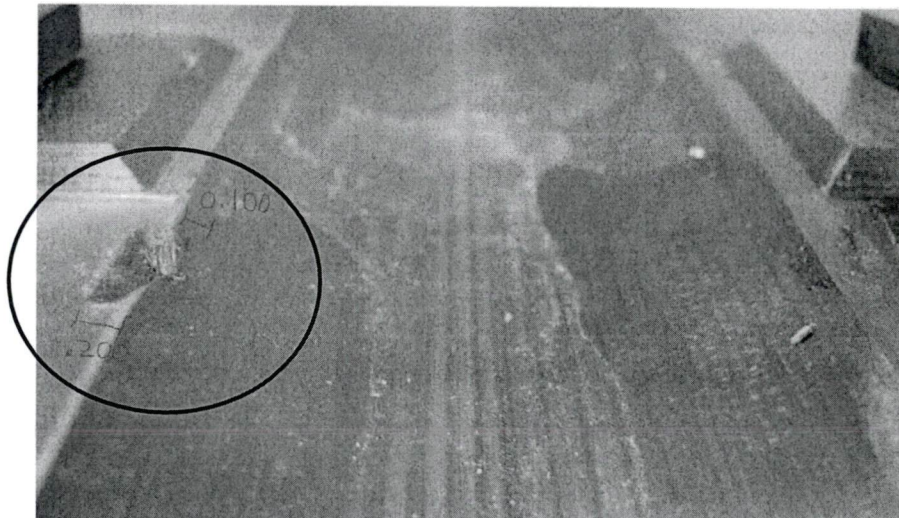


Figure 2 – Damages caused by Bolt Head Interference after first Installation

Repair consists in cutting small pockets in the BearPaw to clear the wear pad bolt heads (Figure 3).

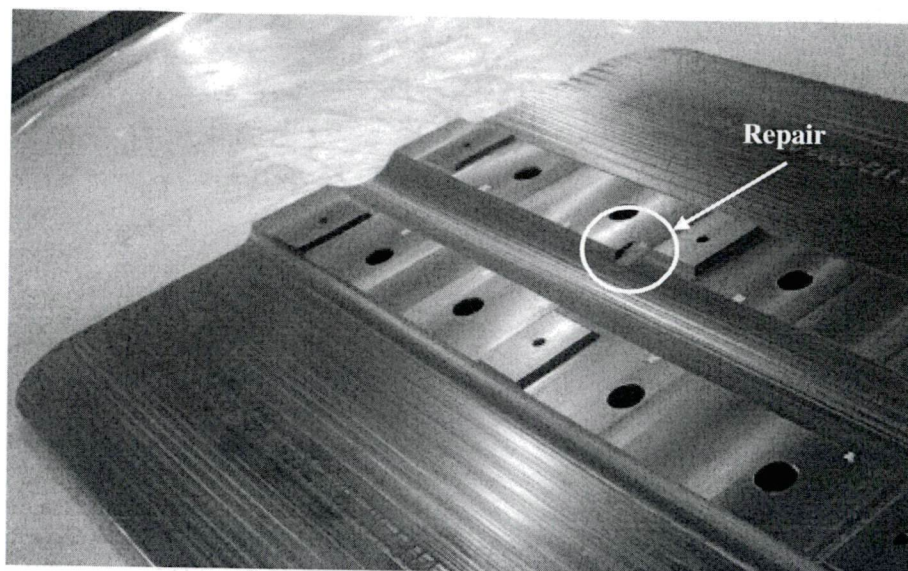


Figure 3 – Repair on BearPaw BP350

STRUCTURAL SUBSTANTIATION:

Structural substantiation of streamline BearPaw BP350 is performed in document HTC-MEM-0709-001 Rev A. Figure 4 is taken from this report and shows that equivalent stress is small in the region where the repair is performed since BearPaw thickness in this region is much larger than in the critical regions. Stress in this region for the repaired BearPaw will remain below stress in the critical region. Therefore, repair is structurally adequate.

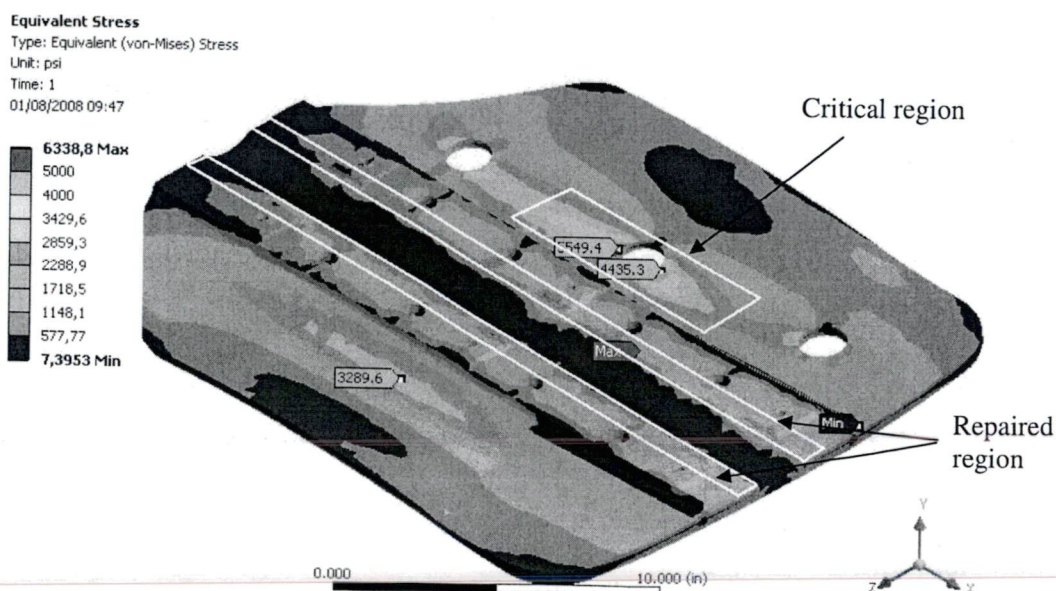
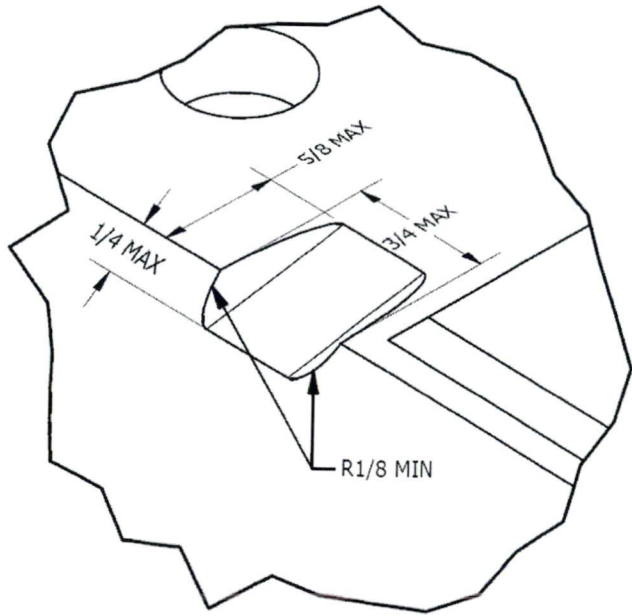
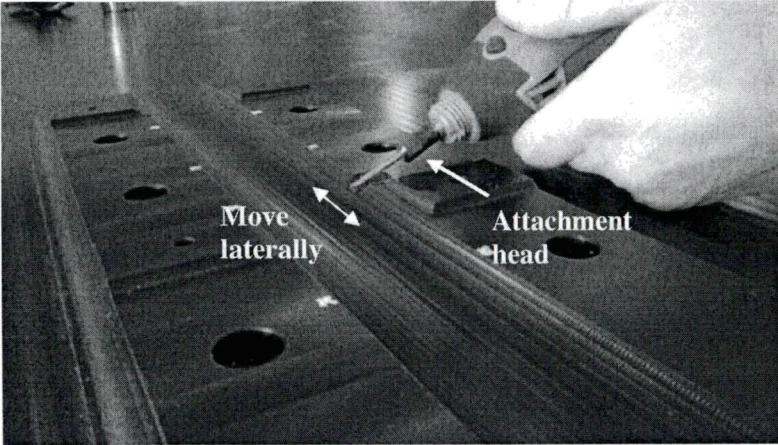


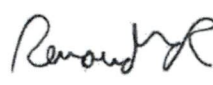



Figure 4 – Structural Substantiation – BearPaw BP350 Streamline Equivalent Stress

REPAIR PROCEDURE:

Step#	Description	Product / Tool	Sign /Date
1.0	Initial Helicopter Preparation		
1.1	Prior to equipment installation, ensure that the helicopter is safe for maintenance.		
2.0	BearPaw Removal		
2.1	Mark on BearPaws the locations of wear pad bolts that interfere with BearPaw or could eventually damage it.		
2.2	Remove BearPaws from helicopter skid as per installation instructions.		
3.0	BearPaw Repair		
3.1	Remove all components from BearPaw pads.		
3.2	<p>Repair BearPaw pads based on the following dimensions.</p>  <p>NOTE Only repair BearPaws at locations where damage occurred, or where damage could eventually occur. Reduce above dimensions as required, except radius.</p>	Dremel End mill	

Step#	Description	Product / Tool	Sign /Date
	<p>NOTE</p> <p>Move <i>Dremel</i> laterally as shown on below picture. Do not move forward and aft of it would mark lines on the surface.</p>  <p>NOTE</p> <p>Recommended tool is a CNC like rotary tool (carbide end mill, 1/8" shank diameter, 1" length of cut, overall length 3"). The long length of cut is required in order to machine the surface laterally without moving the tool forward and aft. The long overall length is required to clear BearPaw surface with attachment head.</p> <p>The use of the following tools is NOT recommended for the repair since they were tested and melt BearPaw surface:</p> <ul style="list-style-type: none"> • Sanding rotary tool • Drill bit used with rotary tool • Half round wood file • Ball nose end mill 		
4.0	BearPaw Installation		
4.1	Install BearPaws on helicopter skid as per installation instructions.		

Engineering Order

Title: Repair of BearPaw BP350 for Installation with Dart Wear Pads				
EO Number: HTC-EO-0709-003 Rev NC		Date issued: April 02, 2015		
Customer:		Project number: A2007-09		
BEARPAW INFORMATION				
Part Number / Description: 314-0018-01-S / BP350 Pad Streamline		Drawing: 314-0018-01-S, Rev D, dated December 21, 2012		
SIGNATURE				
Prepared by:	Mechanical:	Electrical:	Verified:	Approved:
 R. Berthelot, Eng. (OIQ# 5033095) Aviatech (ATS)	 R. Berthelot, Eng. (OIQ# 5033095) Aviatech (ATS)		 J.-F. Lemire, Eng. (OIQ# 141774) Aviatech (ATS)	 Mirko Zgela (DAR #310) Aviatech (ATS)
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SAFETY: The use of proper safety equipment and safe work environment is required at all time.				
SPECIAL TOOLS: <ul style="list-style-type: none"> • Dremel rotary tool • Carbide end mill, 1/8" shank diameter, 1" length of cut, overall length 3" (P/N 3066A59 from Mc Master Carr or equivalent) 				

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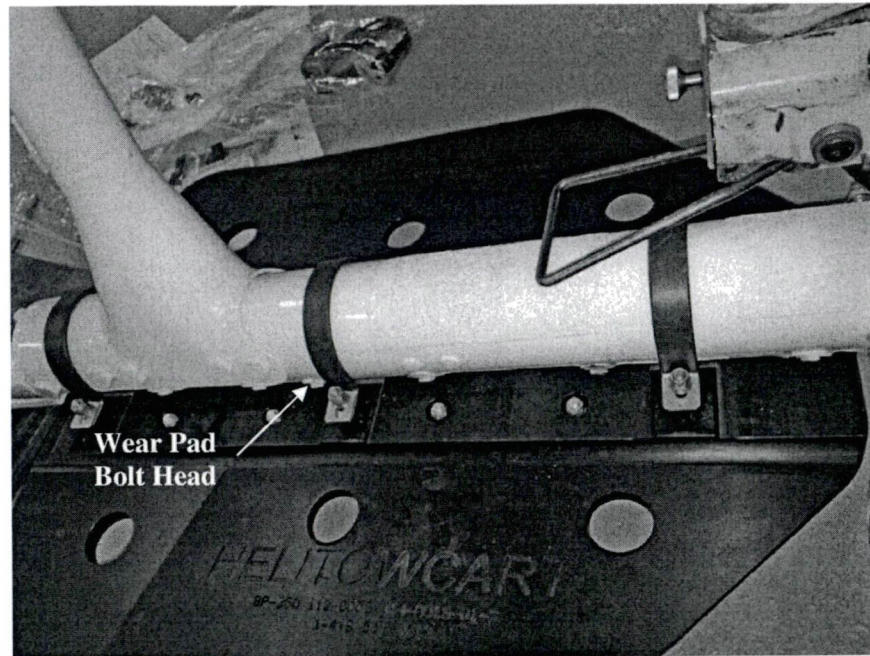


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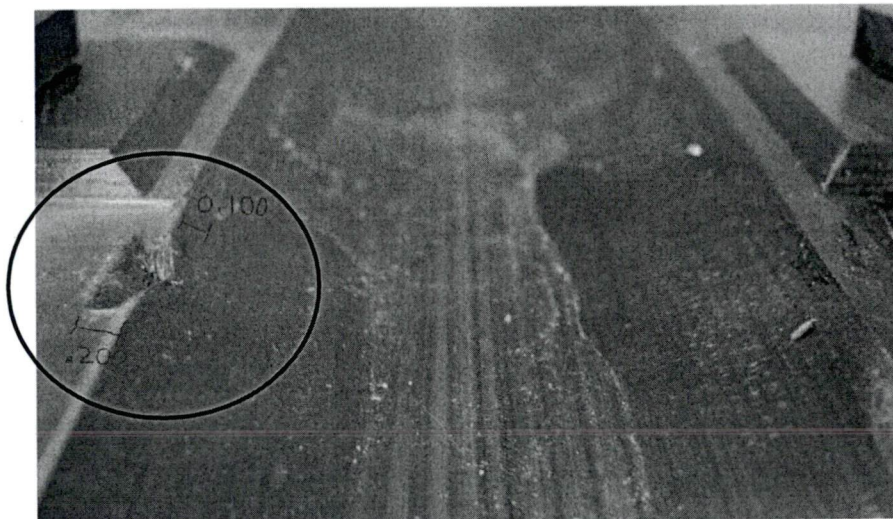


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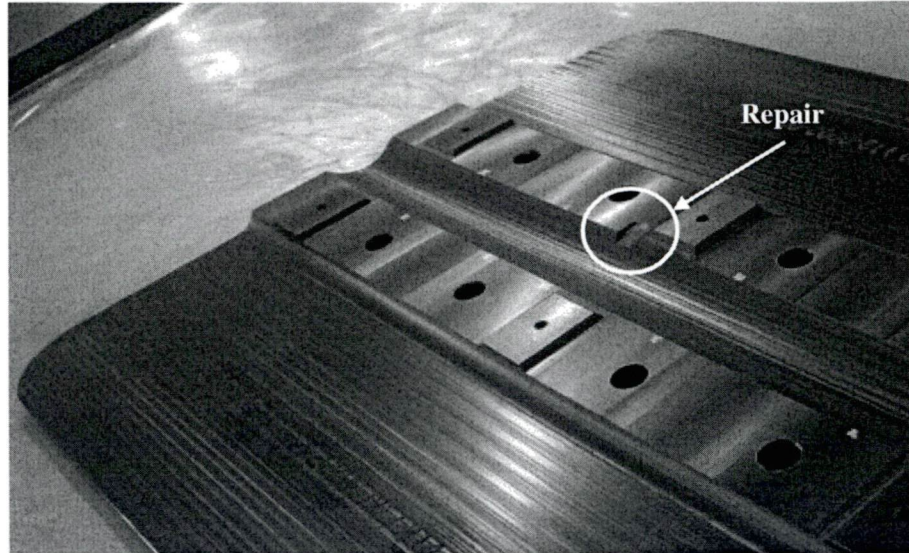


Figure 3 – Repair on BearPaw BP350

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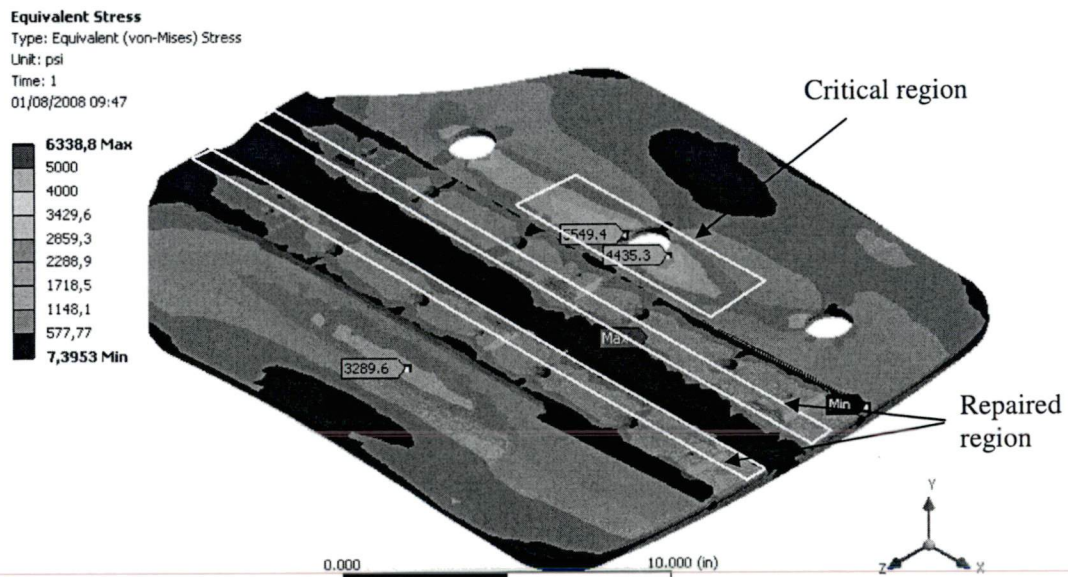
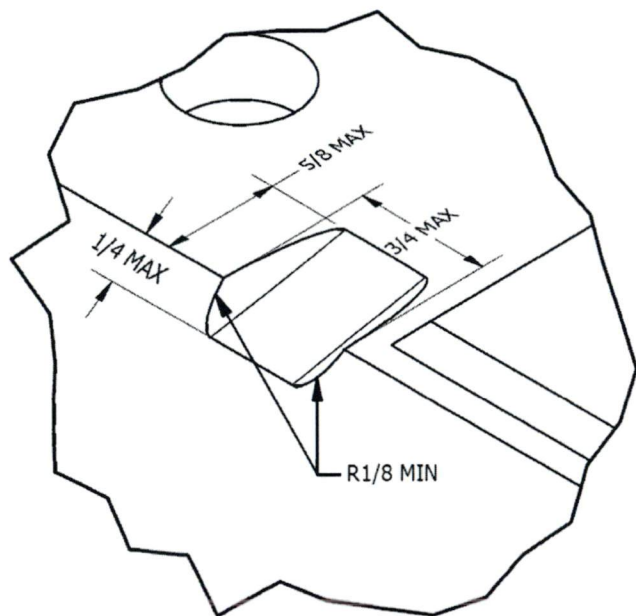
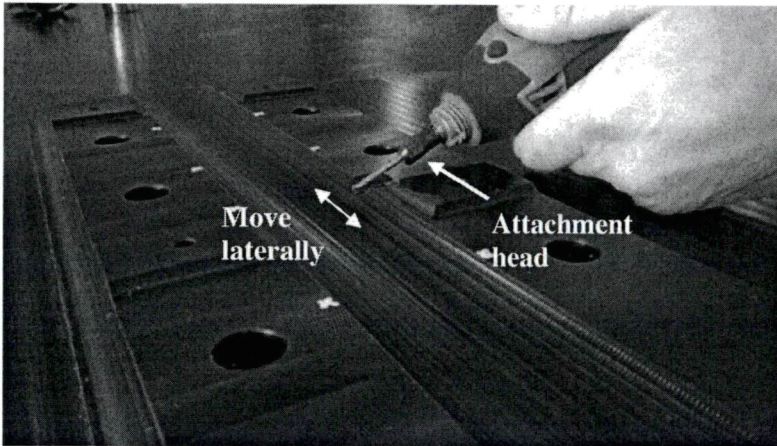
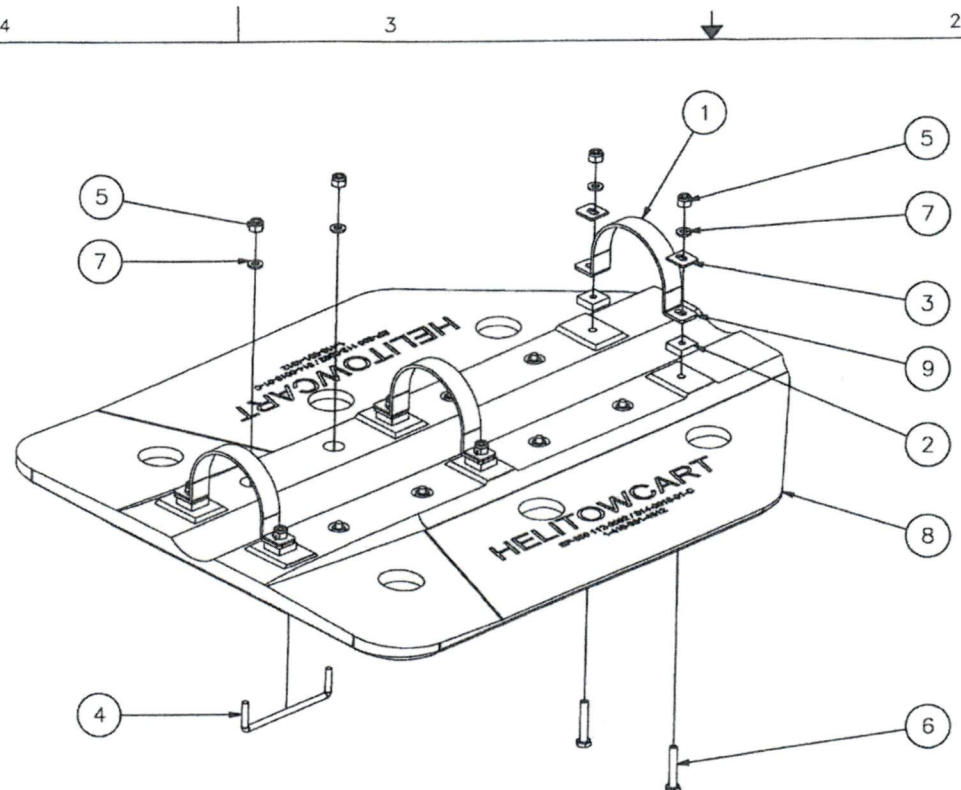


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Step#	Description	Product / Tool	Sign /Date
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4.0	BearPaw Installation		
4.1	Install BearPaws on helicopter skid as per installation instructions.		



1		DR. No 112-0002-00-5	1 OF 1
REVISIONS			
1	REWORKABLE	2	NONREWORKABLE
3	NOTED	4	NA
ZONE	REV	DESCRIPTION	
	A	ADDITION OF STREAMLINE PAD CONFIGURATION	
	B	ADDITION OF VENT HOLES ON THE STREAMLINE PAD	
	C	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD	
	D	DELETED REVISIONS IDENTIFICATION IN PART NUMBER	

21 DEC. 2012

D. Barbeau 2015 04 09

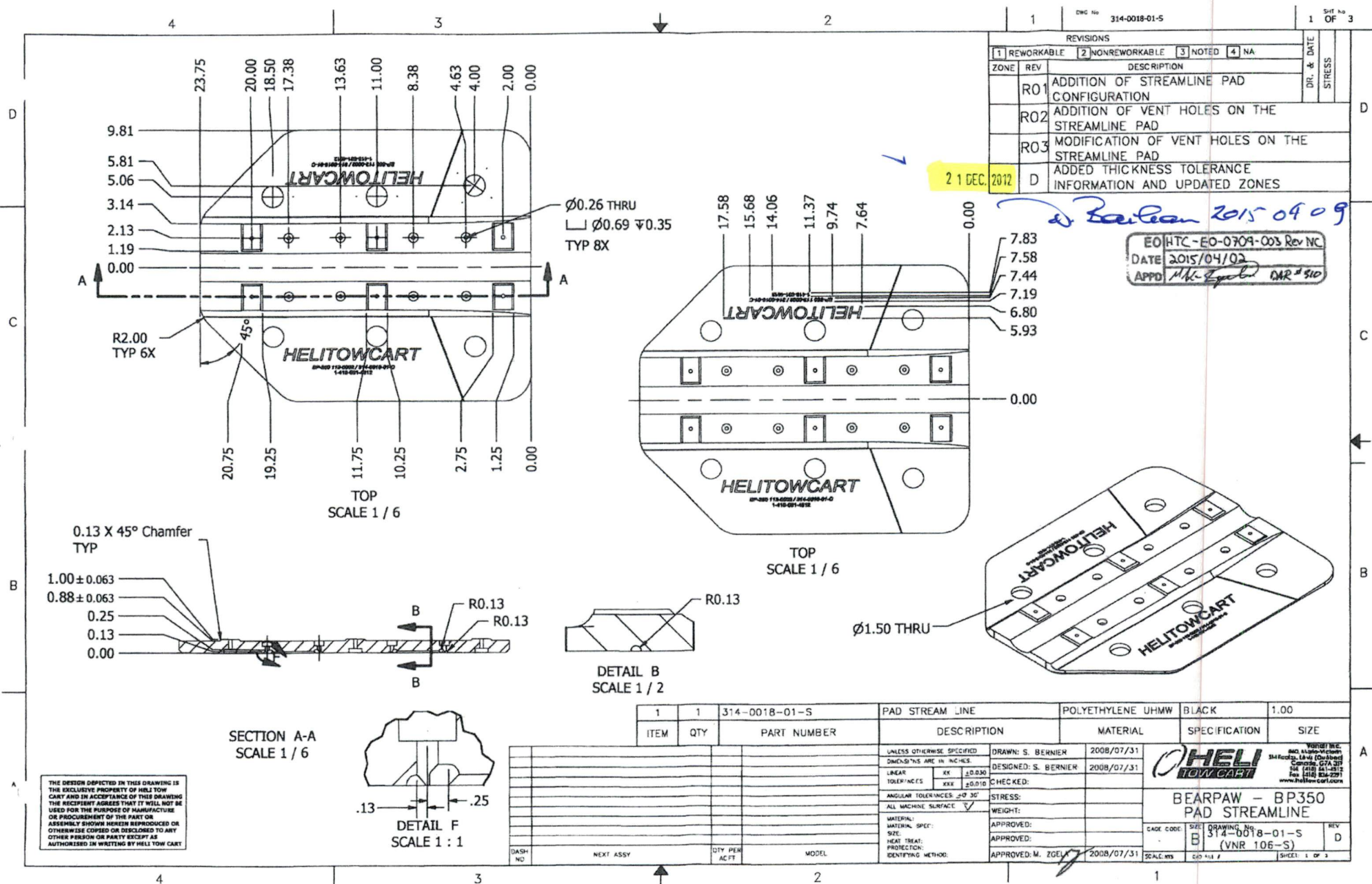
NOTE: ICEBLADE ASSEMBLY, ITEM4, CAN BE OMITED FROM INSTALLATION (OPTIONAL)

1	3	314-0019-15	U SHAPED CLIP	STEEL		
2	6	314-0012-01	FILLER BLOCK	STEEL		1/4
3	6	314-0007-15	SLOTTED CLIP SUPPORT	STEEL		
4	4	314-0005-15	ICE BLADE ASSEMBLY	STEEL		1X6 1/4
5	14	262-0001-17	MD20365-42B	STEEL		1/4-28
6	6	261-0001-17	AN4-14A	STEEL		1/4-28 UNF
7	20	263-0001-17	AN960-416	STEEL		1/4
8	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW BLACK		1
9	1	314-0021-01	SHRINK			

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE
<div> <div> UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: XX ±0.030 XX ±0.010 ANGULAR TOLERANCES: ±30° FILL MACHINE SURFACE MATERIAL: MATERIAL SPEC: SIZE: HEAT TREAT: FINISH: IDENTIFYING METHOD: </div> <div> DRAWN: S. BERNIER 2008/07/31 DESIGNED: S. BERNIER 2008/07/31 CHECKED: STRESS: WEIGHT: APPROVED: APPROVED: M. ZOG 2008/07/31 </div> </div>						
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL	<div> <p>BEARPAW - BP350 ASSEMBLY STREAMLINE</p> <p>CAGE CODE: B 112-0002-00-S</p> <p>SCALE: NTS</p> </div>		

Vendor Inc.
 5401, Maple-Victoria
 Station, L4A 4C6 (Oshawa)
 Canada, Q7A 3P7
 Tel: (416) 841-3372
 Fax: (416) 841-2291
 www.helitowcart.com



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3

2

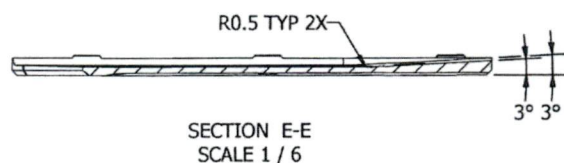
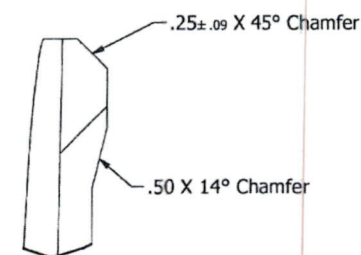
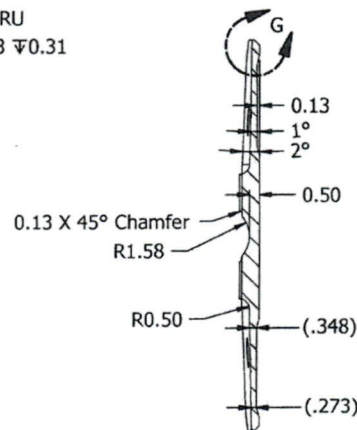
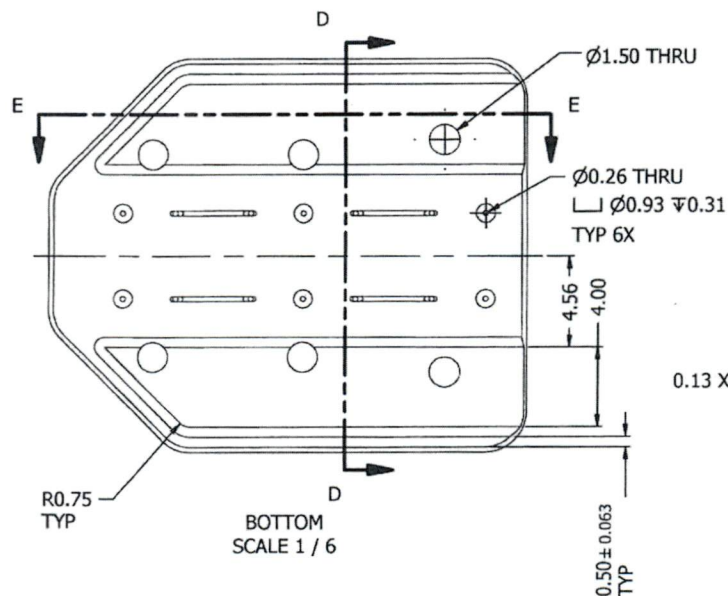
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DWG No 314-0018-01-S

SHEET No 2 OF 3

REVISIONS

1 REWORKABLE		2 NONREWORKABLE		3 NOTED		4 NA	
ZONE	REV	DESCRIPTION				DR. & DATE	STRESS
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION					
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD					
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD					
	D	ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES					



THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR REPRODUCTION OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES				DRAWN: S. BERNIER	2008/07/31
LINEAR TOLERANCES				DESIGNED: S. BERNIER	2008/07/31
XX ±0.030				CHECKED:	
XXX ±0.010				STRESS:	
ANGULAR TOLERANCES ±0.30°				WEIGHT:	
ALL MACHINE SURFACES				APPROVED:	
MATERIAL SPEC:				APPROVED:	
SIZE:				APPROVED: M. ZGELA	2008/07/31
HEAT TREAT:					
FINISHING METHOD:					
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL	<div> </div>	
				<div> BEARPAW - BP350 PAD STREAMLINE </div>	
				<div> CASE CODE: B DRAWING NO: 314-0018-01-S REV: D (VNR 106-S) </div>	
				<div> SCALE: 1:1 SHEET: 2 OF 3 </div>	

4

3

2

1

DR. & DATE
STRESS



TOP



BOTTOM

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORISED IN WRITING BY HELI TOW CART



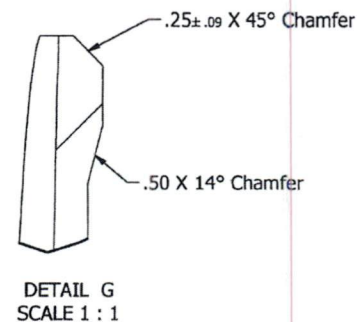
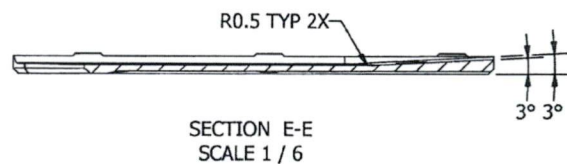
ISO

DASH NO	NEXT ASSY	QTY PER 25 FT	MODEL

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES.		DRAWN: S. BERNIER	2008/07/31
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ANGULAR TOLERANCES: $\pm 30'$		CHECKED:	
ALL MACHINE SURFACE ∇		STRESS:	
MATERIAL:		WEIGHT:	
MATERIAL SPEC:		APPROVED:	
SIZE:		APPROVED:	
HEAT TREAT:		APPROVED: M. ZGELA	2008/07/31
PROTECTION:			
OBTAINING METHOD:			



↑
manuscript
date
2012 12 21



1		DWG No 314-0018-01-S		2		SHEET OF 3	
REVISIONS							
1		2		3		4	
REWORKABLE		NONREWORKABLE		NOTED		NA	
ZONE		REV		DESCRIPTION			
		R01		ADDITION OF STREAMLINE PAD CONFIGURATION			
		R02		ADDITION OF VENT HOLES ON THE STREAMLINE PAD			
		R03		MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD			
		D		ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES			
				DR. & DATE		STRESS	

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[illegible]

DR. & DATE
STRESS



TTOM



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ISO

		Vendri Inc. 5445 Hwy 10 West (Keweenaw) Canada, Q7A 3P3 Tel: (416) 836-2971 Fax: (416) 836-2971 www.heliotowcar.com	
		603, Mainville 5445 Hwy 10 West (Keweenaw) Canada, Q7A 3P3 Tel: (416) 836-2971 Fax: (416) 836-2971 www.heliotowcar.com	
<h1>BEARPAW - BP350</h1> <h2>PAD STREAMLINE</h2>			
CASE CODE:	SIZE	DRAWING NO.	REV
	B	314-0018-01-S (VNR 106-S)	D
SCALE: NTS	DATE: #	SHEET: 3 OF 3	

4

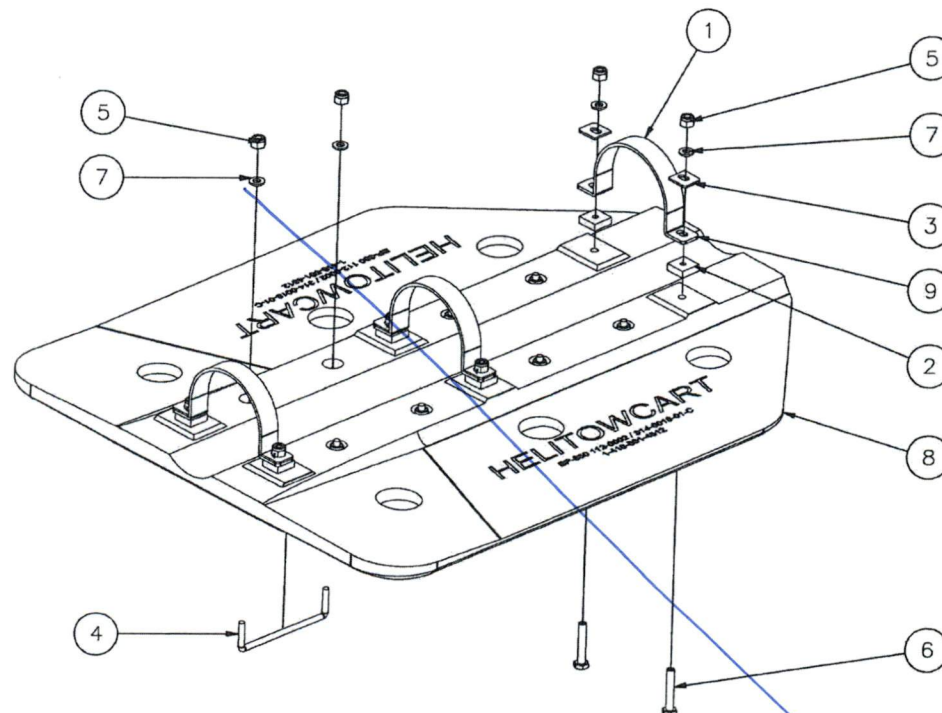
3

2

1

DWG No 112-0002-00-S

SHT No 1 OF 1




REVISIONS				DR. & DATE	STRESS
1	2	3	4		
REWORKABLE	NONREWORKABLE	NOTED	NA		
ZONE	REV	DESCRIPTION			
	A	ADDITION OF STREAMLINE PAD CONFIGURATION			
	B	ADDITION OF VENT HOLES ON THE STREAMLINE PAD			
	C	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD			
	D	DELETED REVISIONS IDENTIFICATION IN PART NUMBER			

manufact
date de rev. D
2012 12 21

1	3	314-0019-15				
2	6	314-0012-01	FILLER BLOCK	STEEL		1/4
3	6	314-0007-15	SLOTTED CLIP SUPPORT	STEEL		
4	4	314-0005-15	ICE BLADE ASSEMBLY	STEEL		1X6 1/4
5	14	252-0001-17	MD20365-42B	STEEL		1/4-28
6	6	251-0001-17	AN4-14A	STEEL		1/4-28 UNF
7	20	253-0001-17	AN960-416	STEEL		1/4
8	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
9	1	314-0021-01	SHRINK			
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

				UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		DRAWN: S. BERNIER 2008/07/31		 <div>Vandri Inc. 880 Avenue du Commerce 114 Rue de la Doune Coteau, Q7A 3P9 Tel: (418) 841-2517 Fax: (418) 841-2517 www.helitowcart.com</div>
				LINEAR TOLERANCES: ± 0.030 XXX ± 0.010		DESIGNED: S. BERNIER 2008/07/31		
				ANGULAR TOLERANCES: $\pm 0.30^\circ$ FULL MACHINE SURFACE <input checked="" type="checkbox"/>		CHECKED:		
				MATERIAL:		STRESS:		
				MATERIAL SPEC:		WEIGHT:		BEARPAW - BP350 ASSEMBLY STREAMLINE
				HEAT TREAT:		APPROVED:		
				FINISHING METHOD:		APPROVED:		
				QTY PER ACT		APPROVED: M. ZOEGLER 2008/07/31		
				MODEL		CAGE CODE:		DRAWING No. B 112-0002-00-S
						SCALE: NTS		
DASH NO		NEXT ASSY						REV: D
								SHEET: 1 OF 1

S. Bernier
2008.07.31

112-0002-00-S-D

Nathalie Barbeau

From: Claude Boule [CBoule@canadianhelicopters.com]
Sent: April-10-15 9:44 AM
To: Nathalie Barbeau
Cc: info@helitowcart.com
Subject: Re: BP350 _ Engineering Order to modify the pads

On vérifie

merci

Claude Boule

Aircraft Standards Manager Superviseur des Standards en Aéronef

Canadian Helicopters Limited

Office 450-452-3000
Direct 450-452-3025
Mobile 514-229-6190
Facsimile 450-452-2483
canadianhelicopters.com

From: "Nathalie Barbeau" <nbarbeau@helitowcart.com>
To: "Claude Boule" <CBoule@canadianhelicopters.com>
Cc: <info@helitowcart.com>
Date: 07/04/2015 11:08 AM
Subject: BP350 _ Engineering Order to modify the pads

Bonjour m. Boulé,

Nous avons enfin reçu le EO pour autoriser la modification des pads.

L'ingénieur a pris le temps de trouver une méthode efficace pour le faire. Il en fait la suggestion dans l'instruction. Voici donc ci-joint les documents attendus par votre équipe!

Bien à vous,

Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc.)

877a Alphonse-Desrochers
St-Nicolas, Levis, Qc
Canada, G7A 5K6
T: +1.418.561.4512
F: +1.418.836.4575

nbarbeau@helitowcart.com

info@helitowcart.com

www.helitowcart.com[attachment "HTC-EO-0709-003 Rev NC (Repair of BearPaw BP350 for Installation with Dart Wear Pads).pdf"]

deleted by Claude Boule/Canadian Helicopters] [attachment "314-0018-01-S Rev D (BP350 Streamline) EO 1.pdf" deleted by Claude Boule/Canadian Helicopters]

Nathalie Barbeau

From: Renaud Berthelot-Richer [renaudb@ats-ast.com]
Sent: April-07-15 12:05 PM
To: Nathalie Barbeau
Cc: Jean-Francois Lemire
Subject: RE: EO BearPaw AS350 - V2
Attachments: 112-0002-00-S Rev D (BP350 Streamline Assembly) Date.pdf; 314-0018-01-S Rev D (BP350 Streamline) EO 1 and Date.pdf

Categories: Cat 1 - Needs important Action

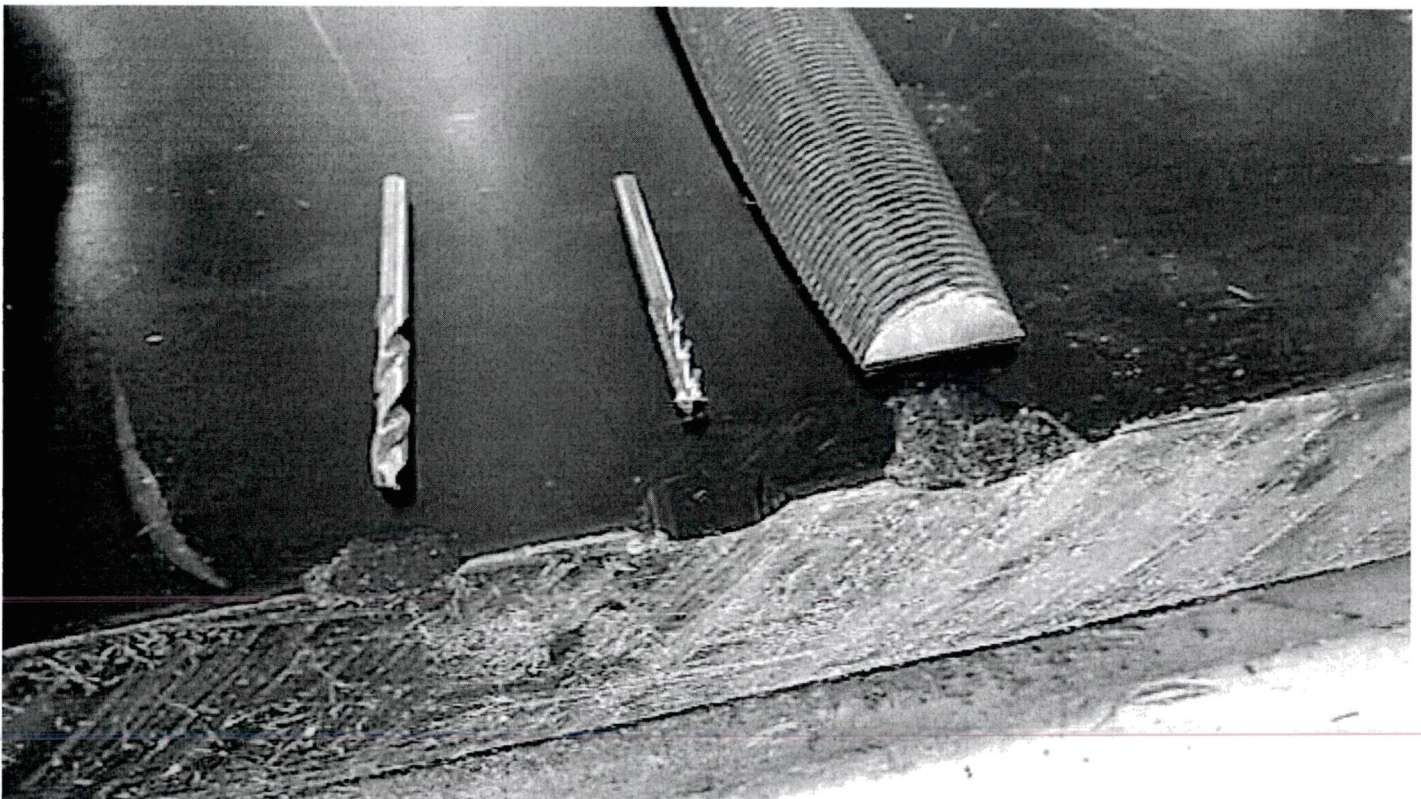
Bonjour Nathalie,

✓ Finalement, en ajoutant une étampe je n'avais pas besoin de refaire signer alors j'ai pu ajouter la date (voir pièces jointes). J'ai aussi ajouté la date sur le dessin d'assemblage. Les dates des autres dessins correspondent à la MDL.

✓ Je vais te retourner le pad. ^{Leon} A noter, après avoir trouvé la technique de réparation recommandée dans le EO, nous avons fait d'autres tests sur le pad. La réparation finale sera donc plus esthétique que celle que tu pourras observer sur le pad et devrait ressembler à la réparation au centre de la figure ci-dessous.

En espérant le tout à ton entière satisfaction!

Renaud



De : Nathalie Barbeau [mailto:nbarbeau@helitowcart.com]

Envoyé : 7 avril 2015 11:05

À : Renaud Berthelot-Richer

Objet : RE: EO BearPaw AS350 - V2

Renaud,

Merci,

Svp me retourner le pad sur lequel vous avez fait les tests.

Nathalie Barbeau

VP Commercial Affairs

Helitowcart (Vanair inc.)

877a Alphonse-Desrochers

St-Nicolas, Lévis, Qc

Canada, G7A 5K6

T: +1.418.561.4512

F: +1.418.836.4575

nbarbeau@helitowcart.com

info@helitowcart.com

www.helitowcart.com

From: Renaud Berthelot-Richer [mailto:renaudb@ats-ast.com]

Sent: April-07-15 10:16 AM

To: Nathalie Barbeau

Cc: Jean-Francois Lemire

Subject: EO BearPaw AS350 - V2

Bonjour Nathalie,

Voici en pièce jointe les documents corrigés. Pourrais-tu supprimer le courriel précédent pour éviter toute confusion?

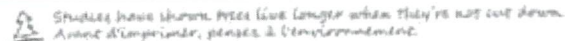
Merci encore pour tes corrections,

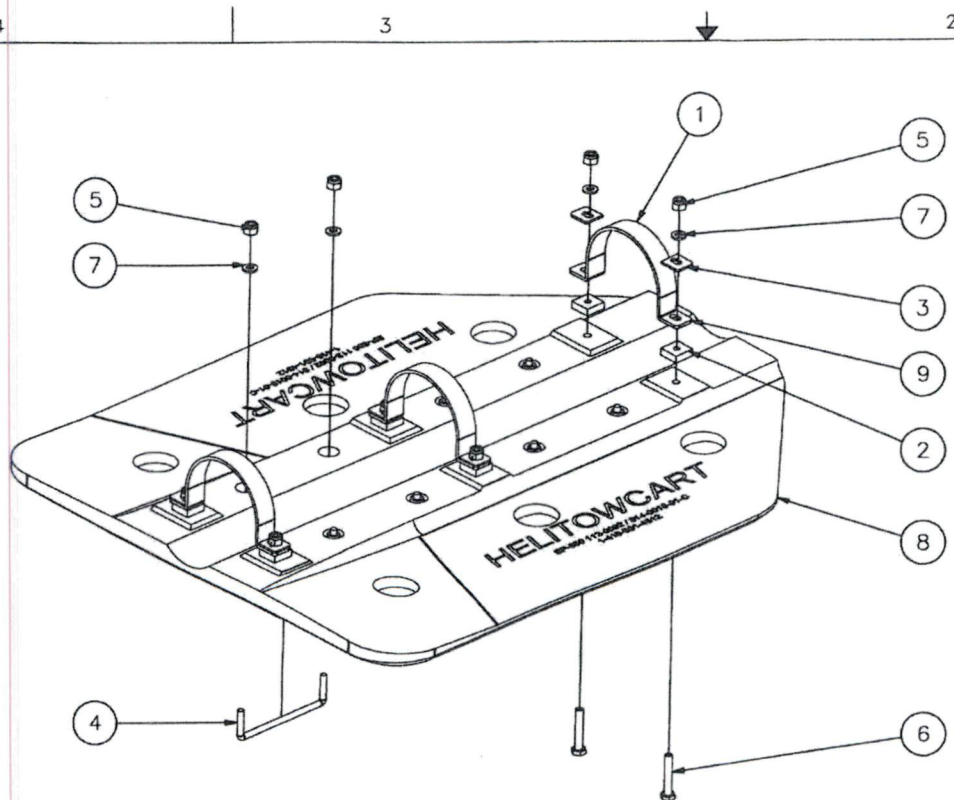
Renaud



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1		DR: 112-0002-00-S	1 OF 1
REVISIONS			
1	REWORKABLE	2	NONREWORKABLE
3	NOTED	4	NA
ZONE	REV	DESCRIPTION	
	A	ADDITION OF STREAMLINE PAD CONFIGURATION	
	B	ADDITION OF VENT HOLES ON THE STREAMLINE PAD	
	C	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD	
	D	DELETED REVISIONS IDENTIFICATION IN PART NUMBER	

NOTE: ICEBLADE ASSEMBLY, ITEM4, CAN BE OMITTED FROM INSTALLATION (OPTIONAL)

1	3	314-0019-15	U SHAPED CLIP	STEEL		
2	5	314-0012-01	FILLER BLOCK	STEEL		1/4
3	6	314-0007-15	SLOTTED CLIP SUPPORT	STEEL		
4	4	314-0005-15	ICE BLADE ASSEMBLY	STEEL		1X6 1/4
5	14	262-0001-17	MD20365-42B	STEEL		1/4-28
6	5	261-0001-17	AN4-14A	STEEL		1/4-28 UNF
7	20	263-0001-17	AN960-416	STEEL		1/4
8	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
9	1	314-0021-01	SHRINK			
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE

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DASH NO	NEXT ASSY	QTY PER ACT	MODEL
UNLESS OTHERWISE SPECIFIED			
DIMENSIONS ARE IN INCHES			
LINEAR	XX	±0.030	
TOLERANCES	XXX	±0.010	
ANGULAR TOLERANCES	±0.30°		
ALL MACHINE SURFACES	✓		
MATERIAL:			
SIZE:			
HEAT TREAT:			
FINISH:			
IDENTIFYING METHOD:			
DRAWN: S. BERNIER	2008/07/31		
DESIGNED: S. BERNIER	2008/07/31		
CHECKED:			
STRESS:			
WEIGHT:			
APPROVED:			
APPROVED: M. ZG	2008/07/31		
CAGE CODE: B 112-0002-00-S			
DRAWING No. D			
SCALE: 4/8			
CART FILE # 112-0002-00-S.dwg			
SHEET: 1 OF 1			



BEARPAW - BP350 ASSEMBLY STREAMLINE

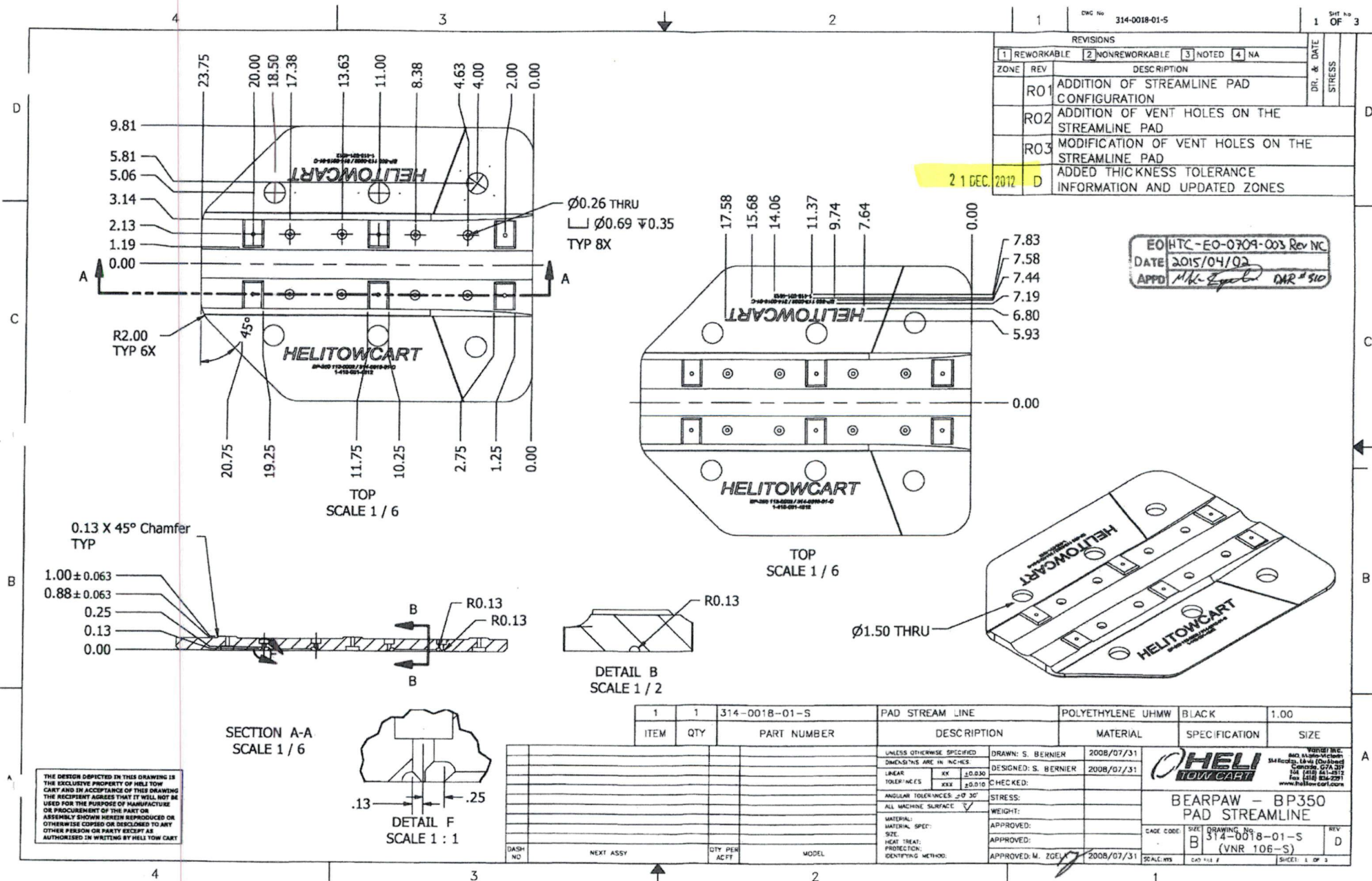
CNC No 314-0018-01-S

SHEET 3

REVISIONS			
1	2	3	4
REWORKABLE	NONREWORKABLE	NOTED	NA
ZONE	REV	DESCRIPTION	
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION	
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD	
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD	
	D	ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES	

21 DEC. 2012

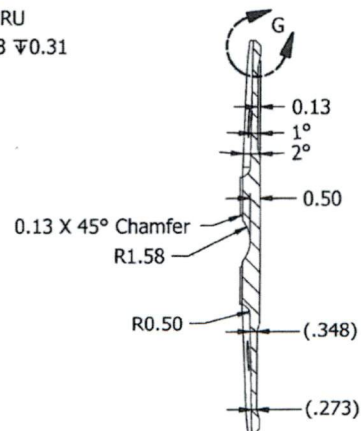
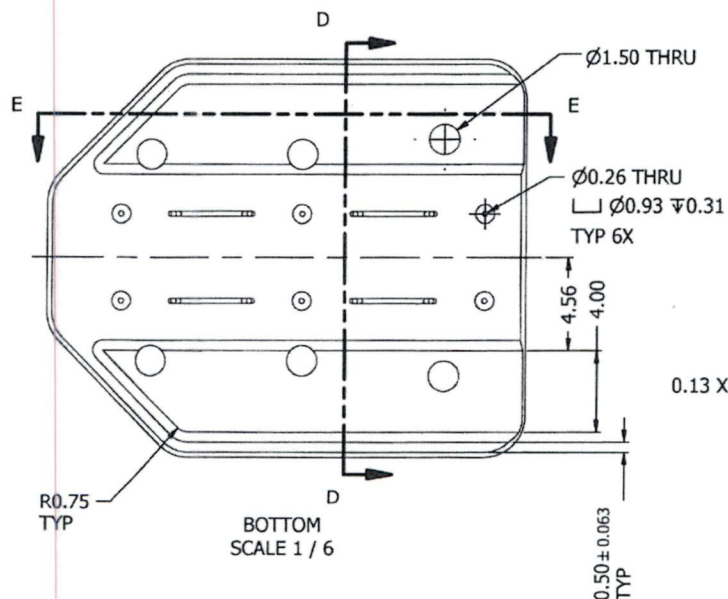
EO HTC - EO-0709-003 Rev NC
DATE 2015/04/02
APPD MKL JKL CAR # 510



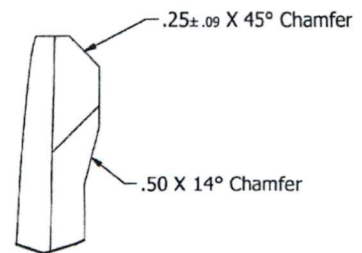
DWG NO 314-0018-01-S

SHEET 3 OF 3

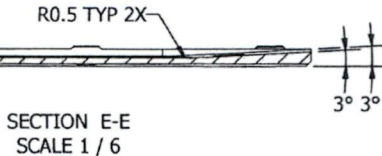
REVISIONS					DR. & DATE	STRESS					
1	REWORKABLE		2	NONREWORKABLE			3	NOTED	4	NA	
ZONE	REV	DESCRIPTION									
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION									
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD									
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD									
	D	ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES									



SECTION D-D
SCALE 1 / 6




DETAIL G
SCALE 1 : 1



SECTION E-E
SCALE 1 / 6

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				UNLESS OTHERWISE SPECIFIED		DRAWN: S. BERNIER		2008/07/31		 <div>Vander Inc. 8401 14th St Calgary, Alberta T2C 1P7 Tel: (403) 661-2812 Fax: (403) 656-2281 www.helicopter.ca</div>	
				DIMENSIONS ARE IN INCHES		DESIGNED: S. BERNIER		2008/07/31			
				LINEAR		XX ±0.020					
				TOLERANCES		XXX ±0.010					
				ANGULAR TOLERANCES		±0.30°					
				ALL MACHINE SURFACE		✓					
				MATERIAL:		APPROVED:					
				MATERIAL SPEC:		APPROVED:					
				SIZE:		APPROVED:					
				HEAT TREAT:		APPROVED: M. ZGELA		2008/07/31			
				PROTECTION:							
				IDENTIFYING METHOD:							
DASH NO		NEXT ASSY		QTY PER ACFT		MODEL				<div>CASE CODE: B</div> <div>DRAWING NO: 314-0018-01-S (VNR 106-S)</div> <div>SCALE: NOS</div> <div>END FILE #</div> <div>SHEET: 3 OF 3</div>	

SAN-BP

Nathalie Barbeau

From: Nathalie Barbeau [nbarbeau@helitowcart.com]
Sent: March-23-15 1:52 PM
To: 'Claude Boule'
Cc: 'info@helitowcart.com'
Subject: Follow UP: BearPaws from Helitowcart - skid wearshe bolt rubbing against pad
Attachments: Damages at 1st installation.JPG; IMG_0180.JPG; IMG_0187.JPG; IMG_0197.JPG

Good afternoon Mr Boulé,
I hope you are doing well. We have had a busy winter and since we came back from Heli-Expo we have had two completely crazy weeks.
Today, I can finally go back to addressing our long term projects.

I wonder: have you had any input from your team about the requested info yet?

I will be out of the country for the 3 first weeks of May so I would like if possible to address this before I leave.

I have already issued a PO with a deposit to our Engineering supplier to perform this EO but we have put all actions on hold until we have sufficient data to perform the work correctly.
We don't mind waiting for your team to provide us feedback with data when they have time, as we understand that they may also be very busy getting ready for the new season.
We would just like to know what are your team's plans s vs providing us with the needed info to perform this EO.
This would allow me to coordinate priorities with the Engineering consultants that do the EOs for us.

Warm Salutations to you and your team!
May you have a sunny Spring!

Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc.)
877a Alphonse-Desrochers
St-Nicolas, Levis, Qc
Canada, G7A 5K6
T: +1.418.561.4512
F: +1.418.836.4575
nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

From: Nathalie Barbeau [mailto:nbarbeau@helitowcart.com]
Sent: February-06-15 3:49 PM
To: 'Claude Boule'
Cc: 'Renaud Berthelot-Richer'
Subject: BearPaws from Helitowcart - skid wearshe bolt rubbing against pad

Good afternoon Mr Boulé,
Thank you for the attached pictures. This was very helpful to us.

As discussed a few minutes ago, in order to solve the issue identified by your team member, we consulted the engineering firm that manages all our STCd products.

✓ They suggest to issue an Engineering Order to allow Mechanics to grind the bearpaw pad edge where the skid wearshoe bolts rub against them as this is the thickest zone and we have sufficient margin in this zone.

Before they go ahead to do an efficient Engineering Order; they asked me if we could request from your mechanics as much info and feedback as possible.

I thus submit to your attention the two questions we wish to ask your team:

- 1) Which Skid & Wearshoe Models?: It is the first time we hear of such issues with our pads. We wish to find out on which brands and models it occurs? (If other models have this issue too, please send us pictures)
- 2) Adjustment Suggestions?: We wish to issue recommendations that are practical and hassle free for your mechanics. I always like to get the input from those in the field, would they have anything to suggest to make it as simple as possible for them to address?

As discussed, I understand that this is a hectic period for your team so we will gladly wait 14 days prior to triggering the Engineering Order creation to wait for your team's feedback,

Our Warm Salutations to you and your team,

Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc.)
877a Alphonse-Desrochers
St-Nicolas, Levis, Qc
Canada, G7A 5K6
T: +1.418.561.4512
F: +1.418.836.4575
nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

From: Claude Boule [<mailto:CBoule@canadianhelicopters.com>]

Sent: February-06-15 9:59 AM

To: Renaud Berthelot-Richer

Cc: Nathalie Barbeau

Subject: Re: BearPaws Helitowcart

Allo, voici quelques photos:

Damages are more evident with the Dart Skid tubes

Je n'est pas eu le temps de trouver un appareil avec des "vieux" dommages.

Claude Boule
Aircraft Standards Manager Superviseur des Standards en Aéronef

Canadian Helicopters Limited
Office 450-452-3000

Direct 450-452-3025
Mobile 514-229-6190
Facsimile 450-452-2483
canadianhelicopters.com



From: "Renaud Berthelot-Richer" <renaudb@ats-ast.com>
To: <CBoule@canadianhelicopters.com>
Cc: "Nathalie Barbeau" <nbarbeau@helitowcart.com>
Date: 02/02/2015 11:56 AM
Subject: BearPaws Helitowcart

Bonjour M. Boule,

Tel que discuté, j'aurais besoin de l'information suivante :

1. Photo montrant le bris ou dommage (ou l'absence de bris ou dommage) sur un bearpaw de plusieurs années;
2. Description du bris ou dommage observé par un opérateur;
3. Photo de côté montrant l'espace entre la tête de bolt et le bearpaw (une distance mesurée serait utile si possible);
4. Quels types de wear pads avez-vous d'installé (pleine longueur ou longueur partielle)?

Merci de nous avoir fait part de cette problématique.

Sincèrement,

Renaud



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Studies have shown trees live longer when they're not cut down.
Arrete d'imprimer, please à l'environnement.

Supplier:	Aviatech
Contact:	Renaud Berthelot-Richer
Coordinates:	2595 Rue St-Olivier Trois-Rivières, Qc, G9A 4G1

renaudb@ats-ast.com
819-601-8049 ext 211

P.O. No:	nb - 150206- 01 <i>(initials-yymmdd-sequence)</i>
Ship to:	Helitowcart Nathalie Barbeau 418 561 4512

Instructions:

[illegible]

Dépot 50% = \$49
Cheque 3116 / 212
POSTÉ 2015 02 04

Issued by:	<i>Nathalie Barbeau</i>
Date:	2015 02 06

Helitowcart (Vanair inc.): 877A Alphonse-Desrochers, St-Nicolas, Qc, Canada, G7A 5K6
tel: 418-561-4512, Fax: 418-836-4575, info@helitowcart.com

Subtotal	\$982.00
Total	
TPS	
TVQ	
Shipping	
Total	

Le 06 février 2015
Dossier: X2015-07 Rev NC

Mme. Nathalie Barbeau
Helitowcart (Vanair inc.)
877a Alphonse-Desrochers
St-Nicolas, Lévis, QC
G7A 5K6

GO AHEAD WITH THIS ONE

Sujet: Engineering Order (EO) pour la réparation des BearPaws modèle BP350

Mme. Barbeau,

Tel que demandé, nous avons préparé un estimé de coûts pour la préparation d'un document d'ingénierie (Engineering Order) permettant la réparation des BearPaws installés sur les hélicoptères AS350/355.

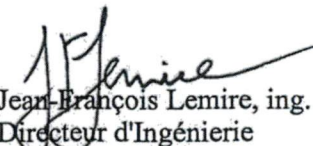
Description	Coût
a. Développement de la méthode de réparation (tests de limage sur BearPaw prototype)	270 \$
b. Rassembler l'information technique auprès de Canadian Helicopters Limited (types de wear pads qui sont problématiques, types de skids, etc.)	142 \$
c. Préparation du document d'ingénierie (Engineering Order)	570 \$
TOTAL:	982 \$

Horaire et Paiements

Le montant total de cette proposition est de 982 \$ et pourra être complétée dans un délai de 2 semaines sous réception d'un PO et d'un dépôt de 50%. Il est de la responsabilité d'Helitowcart d'assurer la collaboration de Canadian Helicopters Limited pour l'obtention des documents techniques demandés par Aviatech.

Pour toutes questions, n'hésitez pas à communiquer avec Renaud Berthelot-Richer qui s'occupera des aspects techniques du projet au 819-601-8049 #211 ou par courriel à renaudb@ats-ast.com.

Sincèrement,


Jean-François Lemire, ing.
Directeur d'Ingénierie
jeanfrancoisl@ats-ast.com
Tél. 819-601-8049 #203

Supplier:	Aviatech	P.O. No:	nb - 150206- 01
Contact:	Renaud Berthelot-Richer		<i>(initials-yyymmdd-sequence)</i>
Coordinates:	2595 Rue St-Olivier	Ship to:	Helitowcart
	Trois-Rivières, Qc, G9A 4G1		Nathalie Barbeau 418 561 4512
	renaudb@ats-ast.com		
	819-601-8049 ext 211		

Instructions:[illegible]

Depot 50% = \$49
Cheque 3116 / 2015
POSTÉ 2015 02 04

Issued by:	Nathalie Barbeau	JOSTE 2015 02 06	
Date:	2015 02 06		

Helitowcart (Vanair inc.): 877A Alphonse-Desrochers, St-Nicolas, Qc, Canada, G7A 5K6
 tel: 418-561-4512, Fax: 418-836-4575, info@helitowcart.com

	Subtotal	\$982.00
	Total	
	TPS	
	TVQ	
	Shipping	
	Total	

Nathalie Barbeau

From: Renaud Berthelot-Richer [renaudb@ats-ast.com]
Sent: March-31-15 9:52 AM
To: Nathalie Barbeau
Cc: Jean-Francois Lemire
Subject: Estimé changement design
Attachments: X2015-10 Rev NC - Estimé Changement Design.pdf

Categories: Cat 1 - Needs important Action

Bonjour Nathalie,

Voici l'estimé en pièce jointe pour le changement au design. J'ai mis une note dans le projet pour qu'on ne l'oublie pas.

Renaud



2595 St-Olivier
Trois-Rivières, Qc, Canada
G9A 4G1

www.ats-ast.com

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Staples have shown trees live longer when they're not cut down.
Avient d'imprimer, pensez à l'environnement.

Now:

TRIGGERED

2015 04 03

- issue an EO that allows mechanics to carve out plastic in pad to fit the Dart wearshoe bolts.

(Does not involve TC)

EO will include suggested instruction & tools to perform the carving without the plastic melting. Renaud says he found a way that will do a good job

Eventually:

HOLD

- Review design of pad to create an additional slot on top, full length to clear the possible DART Bolts.

± \$1700

Renaud suggest we do so when I am ready to trigger a new batch (in 10 months?) so that we can include other changes as well and pay only once for the process with TC.

Le 06 février 2015
Dossier: X2015-10 Rev NC

Mme. Nathalie Barbeau
Helitowcart (Vanair inc.)
877a Alphonse-Desrochers
St-Nicolas, Levis, QC
G7A 5K6

Sujet: Modification au concept du BearPaw pour l'installation sur les hélicoptères AS350/355 équipés de *wear pads*

Mme. Barbeau,

Tel que demandé, nous avons préparé un estimé de coûts pour la modification du concept de BearPaws pour les AS350/355 équipés de *wear pads*. Le présent estimé comprend les éléments suivants :

Description	Coût
a. Conception de la modification	430 \$
b. Mise à jour du dessin d'assemblage et du dessin du pad	520 \$
c. Préparation du document d'ingénierie (Technical Memorandum) pour justifier l'aspect structurel de la modification et mise à jour de la MDL (Master Drawing List)	760 \$
TOTAL:	1710 \$

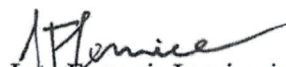
Prendre en note que l'estimé ne comprend pas la mise à jour des dessins de pièce, la mise à jour des instructions d'installation ainsi que des modifications à la quincaillerie nécessaire pour effectuer l'installation (boulons, rondelles, etc.).

Horaire et Paiements

La soumission est d'un montant de 1710 \$ et pourra être complétée dans un délai de 3 semaines sous réception d'un PO et d'un dépôt de 50%. La validité de la présente soumission est de 30 jours.

Pour toutes questions, n'hésitez pas à communiquer avec Renaud Berthelot-Richer au 819-601-8049 #211 ou par courriel à renaudb@ats-ast.com.

Sincèrement,


Jean-François Lemire, ing.
Directeur d'Ingénierie
jeanfrancoisl@ats-ast.com
Tél. 819-601-8049 #203

Aviatech Services Techniques Inc.
2595, rue St-Olivier
Trois-Rivières, Québec, G9A 4G1
Tel: (819) 601-8049 Fax: (819) 377-7928
Courriel: info@ats-ast.com
Site Internet: www.ats-ast.com

Le 06 février 2015
Dossier: X2015-10 Rev NC

Mme. Nathalie Barbeau
Helitowcart (Vanair inc.)
877a Alphonse-Desrochers
St-Nicolas, Levis, QC
G7A 5K6

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Sincèrement,


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Directeur d'Ingénierie
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Site Internet: www.ats-ast.com

Hold This ONE

- on a du stock pour 18 mois en main.
- Attendre proch. prod. pour faire modif. dessin du pad des fois qu'ils auront besoin de chose

To Do: *à faire*

* *Faire un slot pleine longueur pad pour boltons DART*

Nathalie Barbeau

From: Renaud Berthelot-Richer [renaudb@ats-ast.com]
Sent: March-30-15 11:04 AM
To: Claude Boule
Cc: Nathalie Barbeau
Subject: Bearpaws Helitowcart et wear pads dart

Categories: Cat 1 - Needs important Action

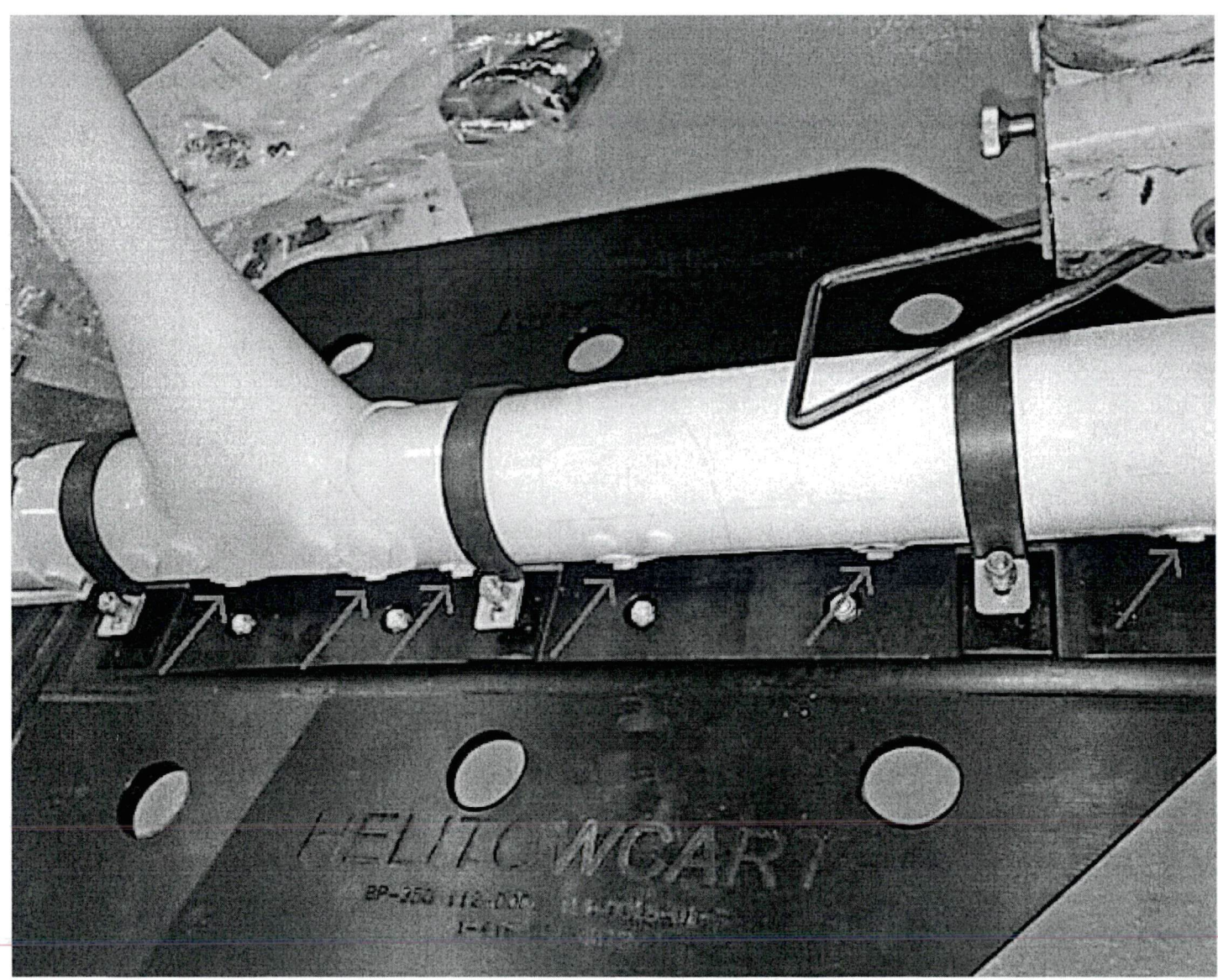
ATT: IMPLIQUÉ
Δ à TC
= \$\$\$
au moins
\$ 1700
à prévoir

Bonjour M. Boule,

Est-ce que l'interférence se produit pour toutes les bolts des wear pads, tel qu'illustré?

Sincèrement,

Renaud



Renaud Berthelot-Richer, ing.
CONCEPTION STRUCTURE AÉRONAUTIQUE
AERONAUTICAL STRUCTURE DESIGN

T: 819.601.8049 #211
renaudb@ats-ast.com

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SERVICES TECHNIQUES^{INC.}
TECHNICAL SERVICES^{INC.}



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Studies have shown that we no longer when they're not out down.
Avant d'imprimer, pensez à l'environnement.

Nathalie Barbeau

From: Nathalie Barbeau [nbarbeau@helitowcart.com]
Sent: February-06-15 3:49 PM
To: 'Claude Boule'
Cc: 'Renaud Berthelot-Richer'
Subject: BearPaws from Helitowcart - skid wearshe bolt rubbing against pad
Attachments: Damages at 1st installation.JPG; IMG_0180.JPG; IMG_0187.JPG; IMG_0197.JPG

Good afternoon Mr Boulé,
Thank you for the attached pictures. This was very helpful to us.

As discussed a few minutes ago, in order to solve the issue identified by your team member, we consulted the engineering firm that manages all our STCd products.
They suggest to issue an Engineering Order to allow Mechanics to grind the bearpaw pad edge where the skid wearshoe bolts rub against them as this is the thickest zone and we have sufficient margin in this zone.

Before they go ahead to do an efficient Engineering Order; they asked me if we could request from your mechanics as much info and feedback as possible.

I thus submit to your attention the two questions we wish to ask your team:

- 1) Which Skid & Wearshoe Models?: It is the first time we hear of such issues with our pads. We wish to find out on which brands and models it occurs? (If other models have this issue too, please send us pictures)
- 2) Adjustment Suggestions?: We wish to issue recommendations that are practical and hassle free for your mechanics. I always like to get the input from those in the field, would they have anything to suggest to make it as simple as possible for them to address?

As discussed, I understand that this is a hectic period for your team so we will gladly wait 14 days prior to triggering the Engineering Order creation to wait for your team's feedback,

Our Warm Salutations to you and your team,

Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc.)
877a Alphonse-Desrochers
St-Nicolas, Levis, Qc
Canada, G7A 5K6
T: +1.418.561.4512
F: +1.418.836.4575
nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

From: Claude Boule [<mailto:CBoule@canadianhelicopters.com>]
Sent: February-06-15 9:59 AM
To: Renaud Berthelot-Richer
Cc: Nathalie Barbeau
Subject: Re: BearPaws Helitowcart

Allo, voici quelques photos:

Damages are more evident with the Dart Skid tubes

Je n'est pas eu le temps de trouver un appareil avec des "vieux" dommages.

Claude Boule

Aircraft Standards Manager Superviseur des Standards en Aéronef

Canadian Helicopters Limited

Office 450-452-3000

Direct 450-452-3025

Mobile 514-229-6190

Facsimile 450-452-2483

canadianhelicopters.com



From: "Renaud Berthelot-Richer" <renaudb@ats-ast.com>
To: <CBoule@canadianhelicopters.com>
Cc: "Nathalie Barbeau" <nbarbeau@helitowcart.com>
Date: 02/02/2015 11:56 AM
Subject: BearPaws Helitowcart

Bonjour M. Boule,

Tel que discuté, j'aurais besoin de l'information suivante :

1. Photo montrant le bris ou dommage (ou l'absence de bris ou dommage) sur un bearpaw de plusieurs années;
2. Description du bris ou dommage observé par un opérateur;
3. Photo de côté montrant l'espace entre la tête de bolt et le bearpaw (une distance mesurée serait utile si possible);
4. Quels types de wear pads avez-vous d'installé (pleine longueur ou longueur partielle)?

Merci de nous avoir fait part de cette problématique.

Sincèrement,

Renaud

Renaud Berthelot-Richer, ing.
CONCEPTION STRUCTURE AÉRONAUTIQUE
AERONAUTICAL STRUCTURE DESIGN

T: 819.601.8049 #211
renaudb@ats-ast.com


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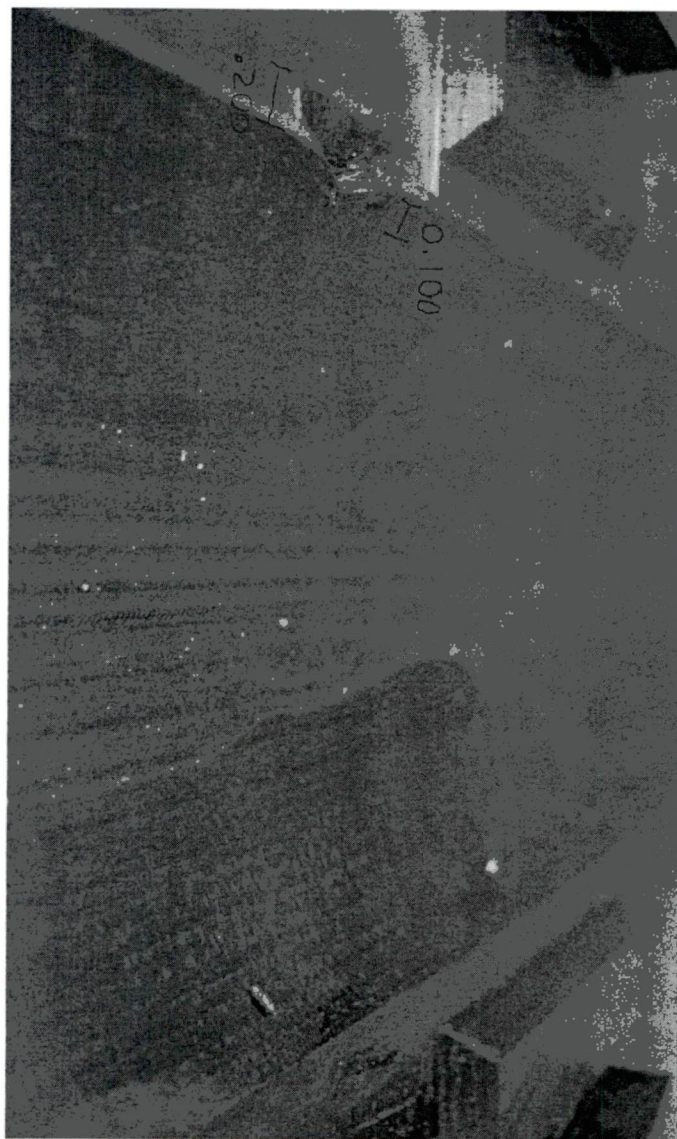
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G9A 4G1

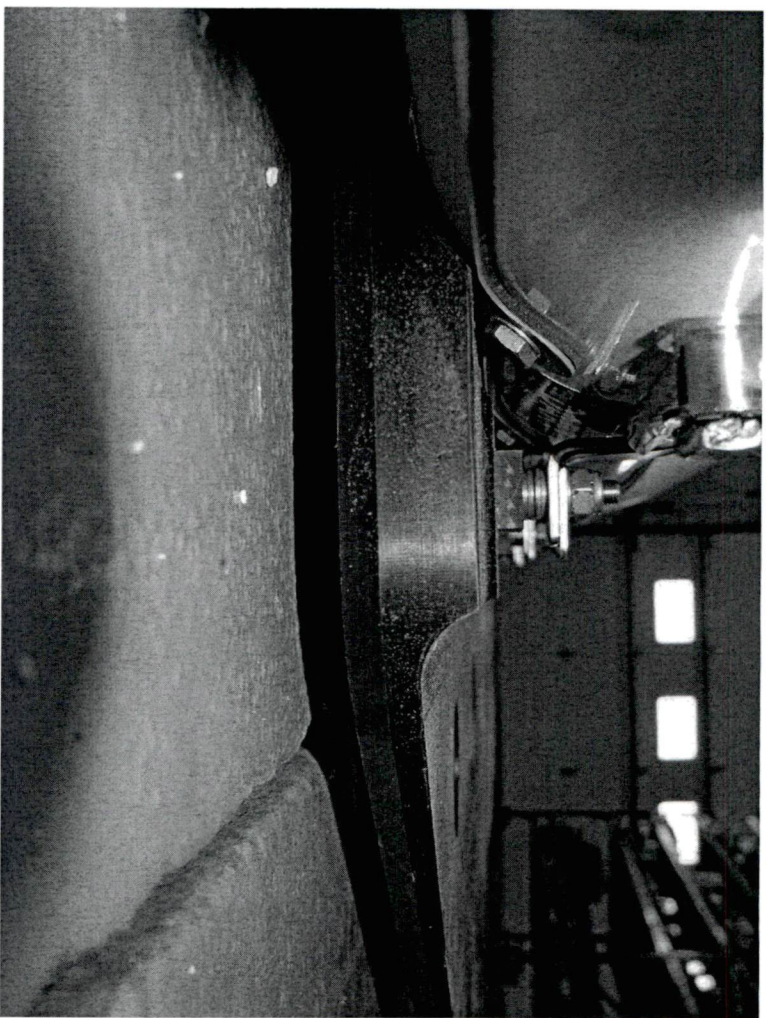
www.ats-ast.com

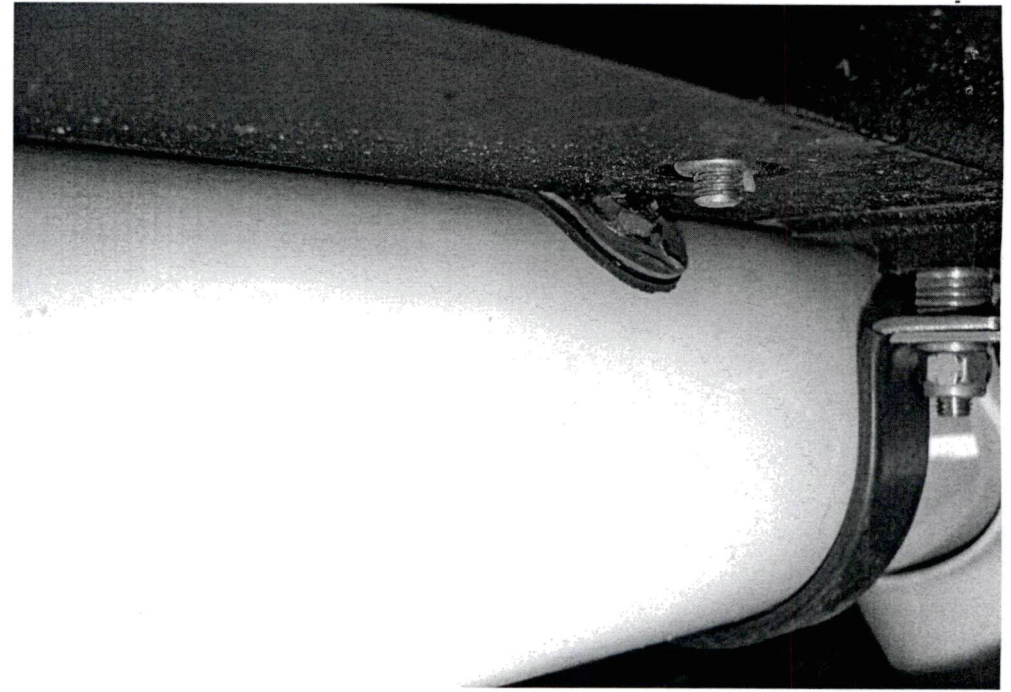
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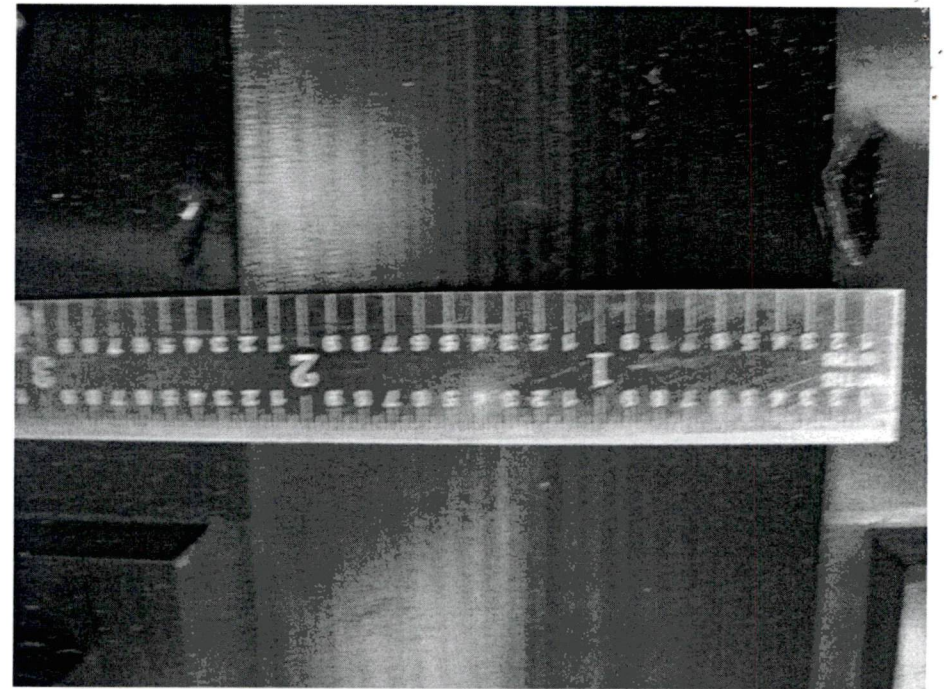
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 *Studies have shown trees live longer when they're not cut down.
Avant d'imprimer, pensez à l'environnement.*









Nathalie Barbeau

From: Renaud Berthelot-Richer [renaudb@ats-ast.com]
Sent: February-02-15 11:56 AM
To: CBoule@canadianhelicopters.com
Cc: Nathalie Barbeau
Subject: BearPaws Helitowcart

Categories: Cat 1 - Needs important Action

Bonjour M. Boule,

Tel que discuté, j'aurais besoin de l'information suivante :

1. Photo montrant le bris ou dommage (ou l'absence de bris ou dommage) sur un bearpaw de plusieurs années;
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4. Quels types de wear pads avez-vous d'installé (pleine longueur ou longueur partielle)?

Merci de nous avoir fait part de cette problématique.

Sincèrement,

Renaud

Renaud Berthelot-Richer, Inc.
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renaudb@ats-ast.com

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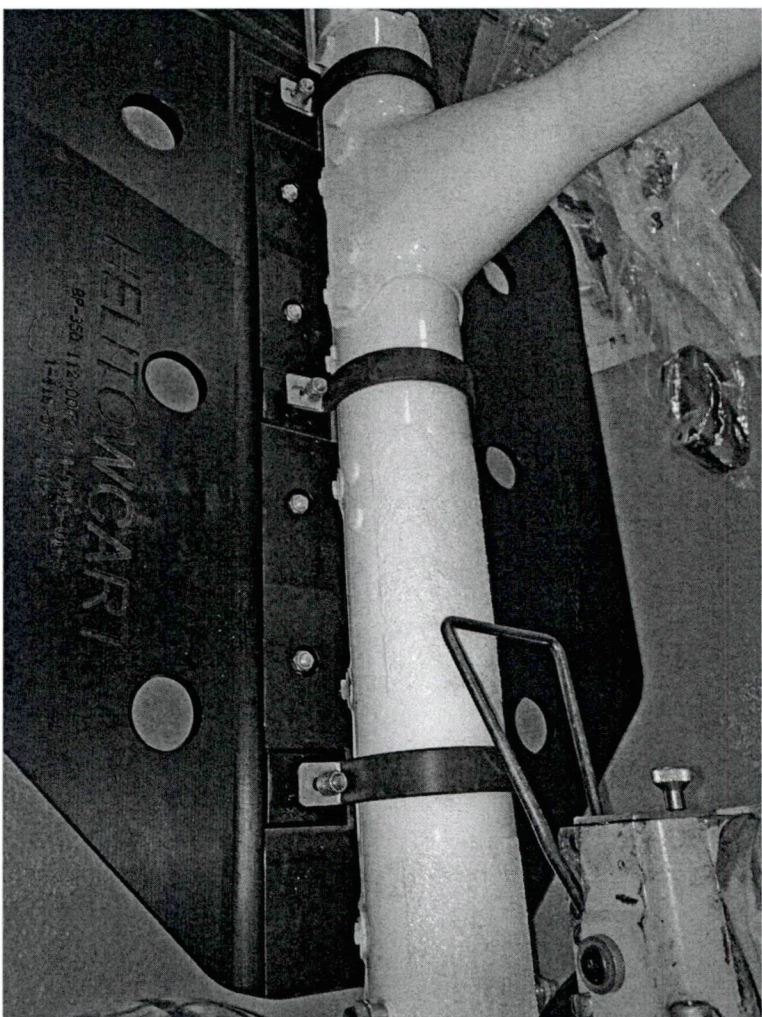
www.ats-ast.com

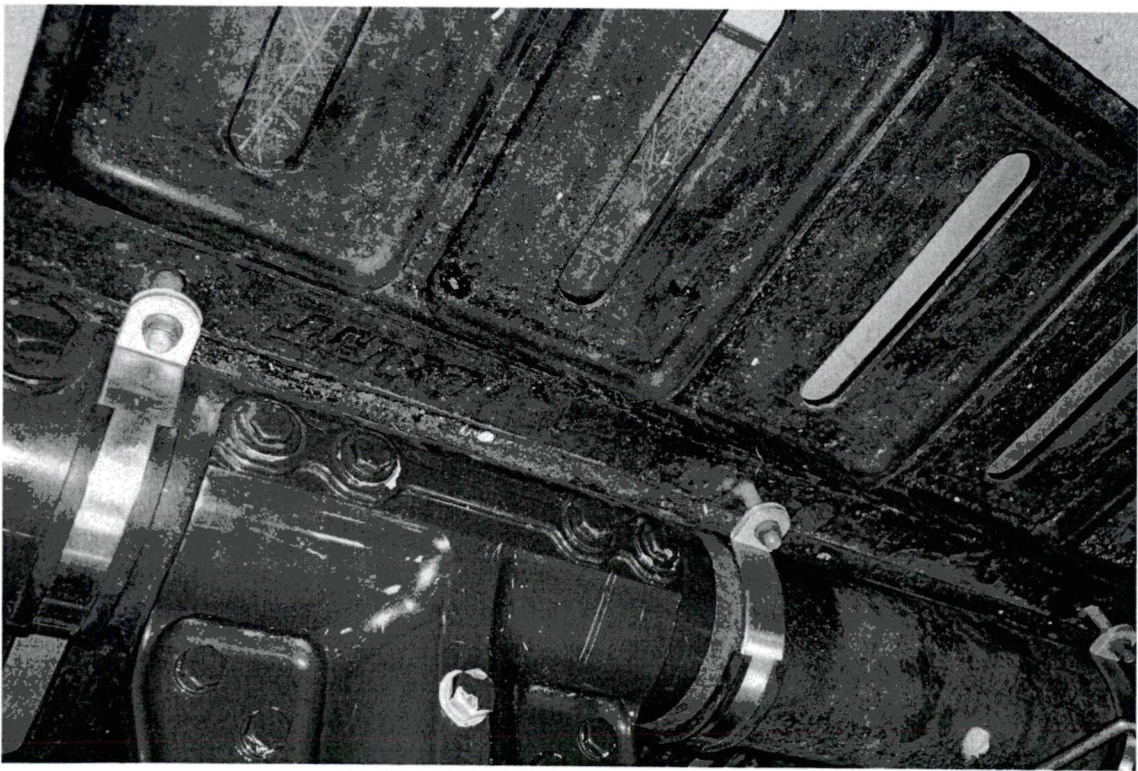
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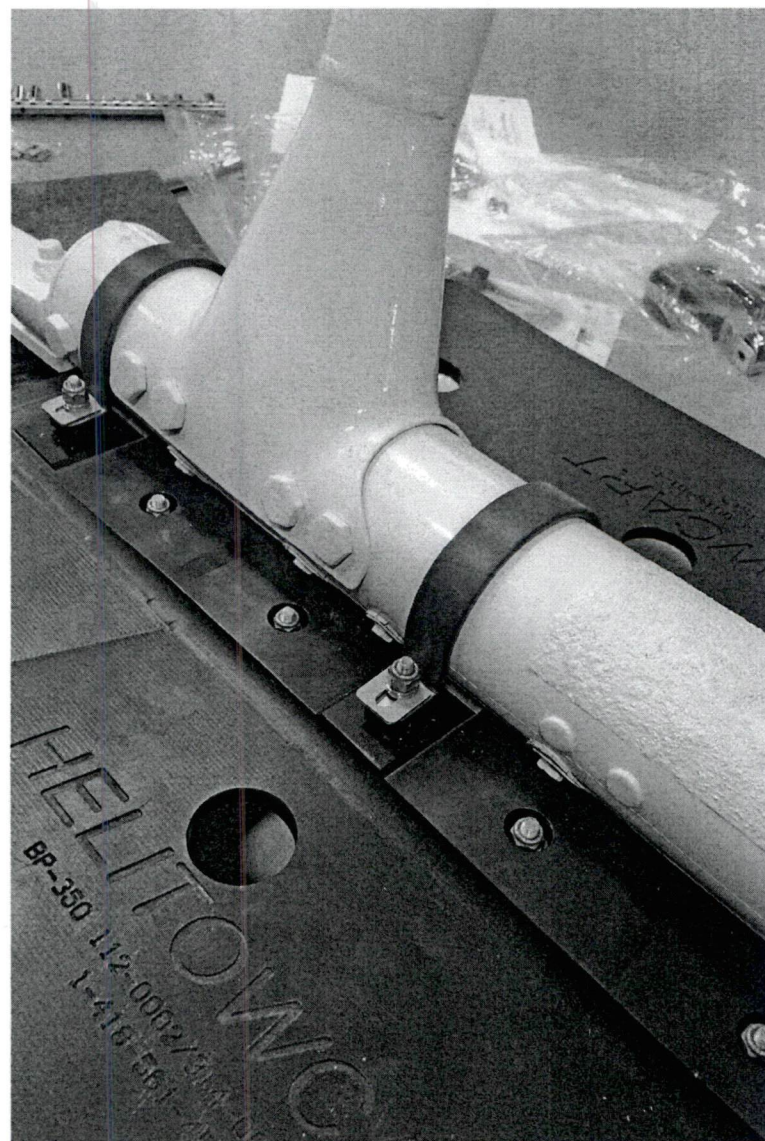
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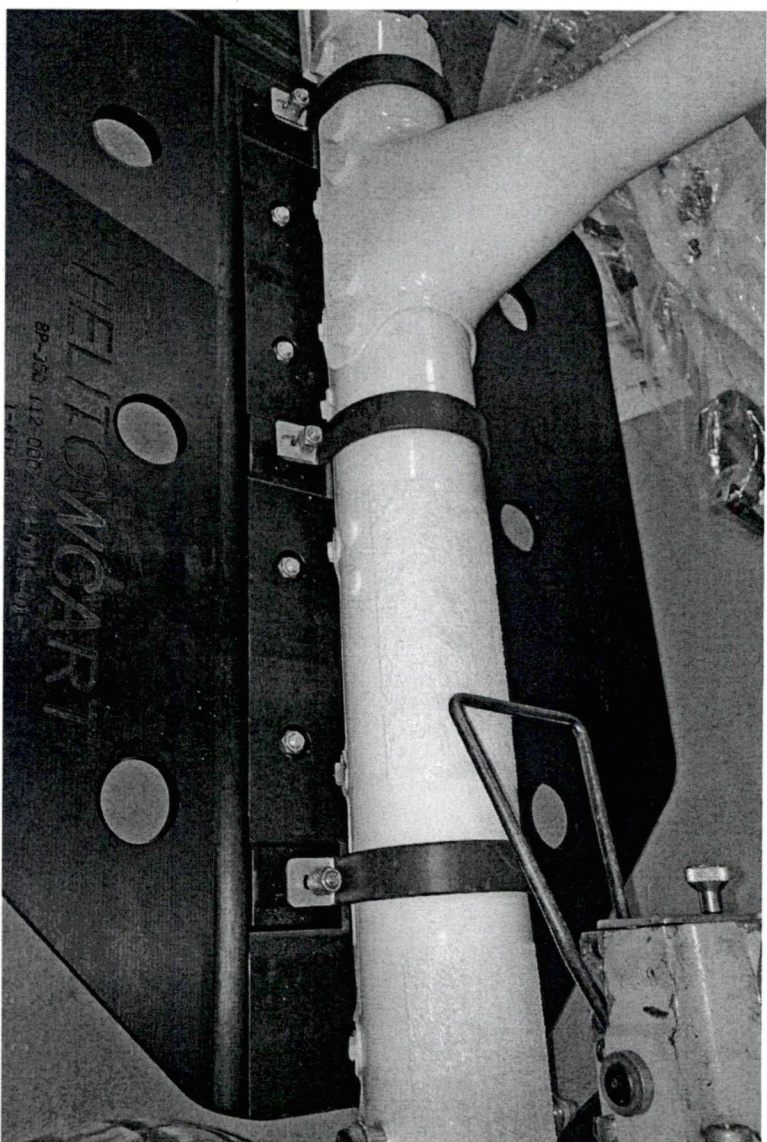


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Nathalie Barbeau

From: Claude Boule [CBoule@canadianhelicopters.com]
Sent: February-02-15 8:26 AM
To: nbarbeau@helitowcart.com
Subject: AS350 Beapaws, defect
Attachments: 001.jpg; 003.jpg; DART.jpg

Categories: Cat 1 - Needs important Action

Bonjour

Nous avons découvert que les Bearpaws ne pivotes a cause der la découpe parfaite au diamètre du skid tube , ne permet pas sa rotation, dont il accroche sur les bolts qui retiennent les wear shoes.

Un chamfrin devrait être fait (Dart on fait un diameter de coupe plus grand)

Claude Boule
Aircraft Standards Manager Superviseur des Standards en Aéronef

Canadian Helicopters Limited
Office 450-452-3000
Direct 450-452-3025
Mobile 514-229-6190
Facsimile 450-452-2483
canadianhelicopters.com

